

# DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES



TED SCHWINDEN, GOVERNOR

COGSWELL BUILDING

## STATE OF MONTANA

HELENA, MONTANA 59620

WATER QUALITY BUREAU  
Telephone: 444-2406

MAY 06 1985

Date

### SHELTER BAY ESTATES Draft Environmental Impact Statement

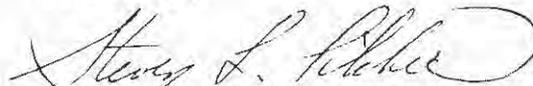
Honorable Ted Schwinden, Governor, State of Montana, Helena, MT  
Honorable George Turman, Lieutenant Governor, State of Montana, Helena, MT  
Department of Fish, Wildlife and Parks, Region One, Box 67, Kalispell, MT  
Montana Historical Society, Historic Preservation Office, Attn: David Schwab, 225 North Roberts St., Helena, MT  
Montana State Library, Helena, MT  
Environmental Quality Council, Helena, MT  
U.S. Environmental Protection Agency, Montana Office, Federal Building, 301 S. Park, Drawer 10096, Helena, MT  
University of Montana, Attn: Dr. Carling Malouf, Department of Anthropology, Missoula, MT  
University of Montana, Attn: Dr. Jack Stanford, Biological Station, East Shore, Flathead Lake, Bigfork, MT  
U.S. Fish & Wildlife Service, Federal Building, Room 3035, 316 N. 26th St., Billings, MT  
District Engineer, Omaha District, Corps of Engineers, Attn: Operations Office, 6014 U.S. Post Office and Courthouse, Omaha, NE  
Honorable John Melcher, United States Senate, Washington, D.C.  
Honorable Max Baucus, United States Senate, Washington, D.C.  
Honorable Pat Williams, House of Representatives, 1641 Longworth Bldg, Washington, D.C.  
Dr. John F. McGregor, Prospect Heights Medical Center, 401 15th Ave. S., Great Falls, MT  
Tennie Bottomly, 3729 Hamilton Road, Belgrade, MT  
Dr. Kenneth C. Lee, Box 340 Scobey, MT  
William A. Spoja, Jr., Box 882, Lewistown, MT  
Dr. Richard P. Swenson, 1510 Highland, Helena, MT  
J. Howard Toole, 126 E. Broadwater #15, Missoula, MT  
Edwin Zaidlicz, 724 Park Lane, Billings, MT  
Lake County, Attn: Commissioners, Polson, MT  
Lake County, Attn: Land Services Department, Polson, MT  
Lake County, Attn: Superintendent of Schools, Polson, MT  
Lake County, Attn: Sheriff, Polson, MT  
Lake County, Attn: County Attorney, Polson, MT  
Lake County Library, Polson, MT  
Jack Green II, Box 9410, Missoula, MT  
ERA Staninger & Associates, Attn: Ken Staninger, 2806 Garfield, Missoula, MT  
Stensatter, Druyvestein and Associates, Attn: Charles S. Johnson, 3201

Russell Ave., Missoula, MT  
 Jon L. Heberling, 745 South Main, Kalispell, MT  
 Jay Billmeyer, 2191 3rd Ave. E, Kalispell, MT  
 Confederated Salish/Kootenai Tribes, Attn: Joe Felsman, Chairman, Box 278,  
 Flathead Agency, Pablo, MT  
 Flathead Basin Commission, Attn: Elwin Bennington, Box 1039, Polson, MT  
 Archie C. McDivitt, Jr., Rollins, MT  
 Don Schwennesen, East Shore, Bigfork, MT  
 Tribune Bureau, 104 Broadway, Room #7, Helena, MT  
 Lee State Bureau, Box 4249, Helena, MT  
 Daily Inter Lake, Box 8, Kalispell, MT  
 Flathead Courier, Polson, MT  
 Kalispell Weekly News, Kalispell, MT  
 Environmental Information Center, Box 1184, Helena, MT  
 Betty Beal, 301 Caroline Point, Lakeside, MT  
 Robert D. Kembel, 901 Kensington, Missoula, MT  
 Mack and Agnes Armstrong, Box 147, Rollins, MT  
 Flathead Lakers, Inc. Attn: Robert W. Kemler, Director, Box 290, Polson, MT  
 Bruce L. Ennis, 3000 Walden Place, Billings, MT  
 Jean and David Jones, Box 416, Rollins, MT  
 Muriel S. Fischback, Box 348, Rollins, MT  
 Felix F. Moran, Box 374, Rollins, MT  
 D.L. Erickson, Box 57, Lakeside, MT  
 Michael and Gay Naidi, Box 116, Rollins, MT  
 Fay Sullivan, Box 25, Rollins, MT  
 Dale and Lois Muri, Rollins, MT  
 M.J. Galloway, Box 79, Lakeside, MT  
 William and Virginia Zelezny, Box 37, Rollins  
 Anna J. Murphy, Box 37, Rollins, MT  
 Wallace Barce, Box 335, Rollins, MT  
 Elma Garber, Box 362, Rollins, MT  
 E.D. Baughman, Rollins, MT  
 Kathryn Hormold, Box 381, Rollins, MT  
 Vida Winkley, Rollins, MT  
 Jean Lack, Rollins, MT  
 Francis L. Atkins, Rollins, MT  
 Edna Hebard, Box 6, Rollins, MT  
 Claise London, Box 355, Rollins, MT  
 Elsa Swallow, Box 241, Dayton, MT  
 Sylvia Oberg, Rollins, MT  
 Mabel Chester, Rollins, MT  
 Anne Lebkiche, Rollins, MT  
 Gem H. Mercer, Polson, MT  
 John F. McMillen, 217 E. Washington Center Rd., Fort Wayne, IN  
 Dr. and Mrs. John F. Siedensticker, 616 Central Center, Chillicothe, OH  
 Edna and Norman Hendriksen, Rollins, MT  
 Pearl Steffes, Box 387, Rollins, MT  
 Emma and Elgie Sager, Rollins, MT  
 Violet Hanson, Rollins, MT  
 Howard Thomas, Box 404, Rollins, MT  
 Glen Niswanger, 717 90th Place SE, Everett, WA  
 Lynn Weaver, Box 386, Rollins, MT  
 Charles B. Rogers, Box 353, Rollins, MT  
 Rita Crum Lawson, 8313 46th Place W., Mukilteo, WA  
 Harris and Moroea Weaver, Rollins, MT

This draft environmental impact statement has been prepared for the proposed Shelter Bay Estates subdivision, Lake County, Montana and is being submitted for your consideration. Questions and substantive comments will be accepted for 30 days after the date of this publication. All comments should be sent to: Subdivision Section, Water Quality Bureau, Montana Department of Health and Environmental Sciences, Cogswell Building, Capitol Station, Helena, MT 59601

A public meeting concerning this proposed development will be held at the Lake County Courthouse on Thursday evening May 30, 1985, beginning at 7:00 p.m. in the Conference Room, on the third floor of the courthouse.

Sincerely,

A handwritten signature in cursive script, appearing to read "Steven L. Pilcher". The signature is written in dark ink and is positioned above the typed name.

Steven L. Pilcher, Chief  
Water Quality Bureau



## TABLE OF CONTENTS

	<u>Page</u>
Description	1
Current Environmental Conditions	4
The Physical Environment	4
Terrestrial and Aquatic Life and Habitats	4
Vegetation Cover, Quality and Quantity	7
Geology and Soil Quality, Stability and Moisture	8
Geology	8
Soils	9
Water Quality, Quantity and Distribution	10
Air Quality	19
Aesthetics	19
Archaeological and Historic Sites	21
Unique, Endangered or Limited Environmental Resources	23
Demands on Environmental Resources of Land, Water and Energy	24
The Human Environment	24
Social and Cultural Uniqueness and Diversity	25
Demands on Public Services	25
Schools	25
Fire Protection	26
Police Protection	27
Health and Emergency Services	27
Roads	27
Recreation	30
Economics and Taxes	31
Effects on Agriculture	32
Industrial and Commercial Activity	32
Locally Adopted Environmental Plans and Goals	32

	<u>Page</u>
Primary, Secondary and Cumulative Impacts	36
Potential Growth Inducing or Growth Inhibiting Impacts	38
Irreversible and Irretrievable Commitments of Environmental Resources	38
Economic and Environmental Benefits and Costs	38
Benefits	38
Costs	39
Short-Term vs. Long-Term Environmental Costs and Benefits	39
Short-Term	39
Long-Term	39
Alternatives	40
Recommendation	40
Footnotes	40
Bibliography	44
Contributors	46

Montana Department of Health  
and  
Environmental Sciences  
Draft  
Environmental Impact Statement

Shelter Bay Estates  
Lake County

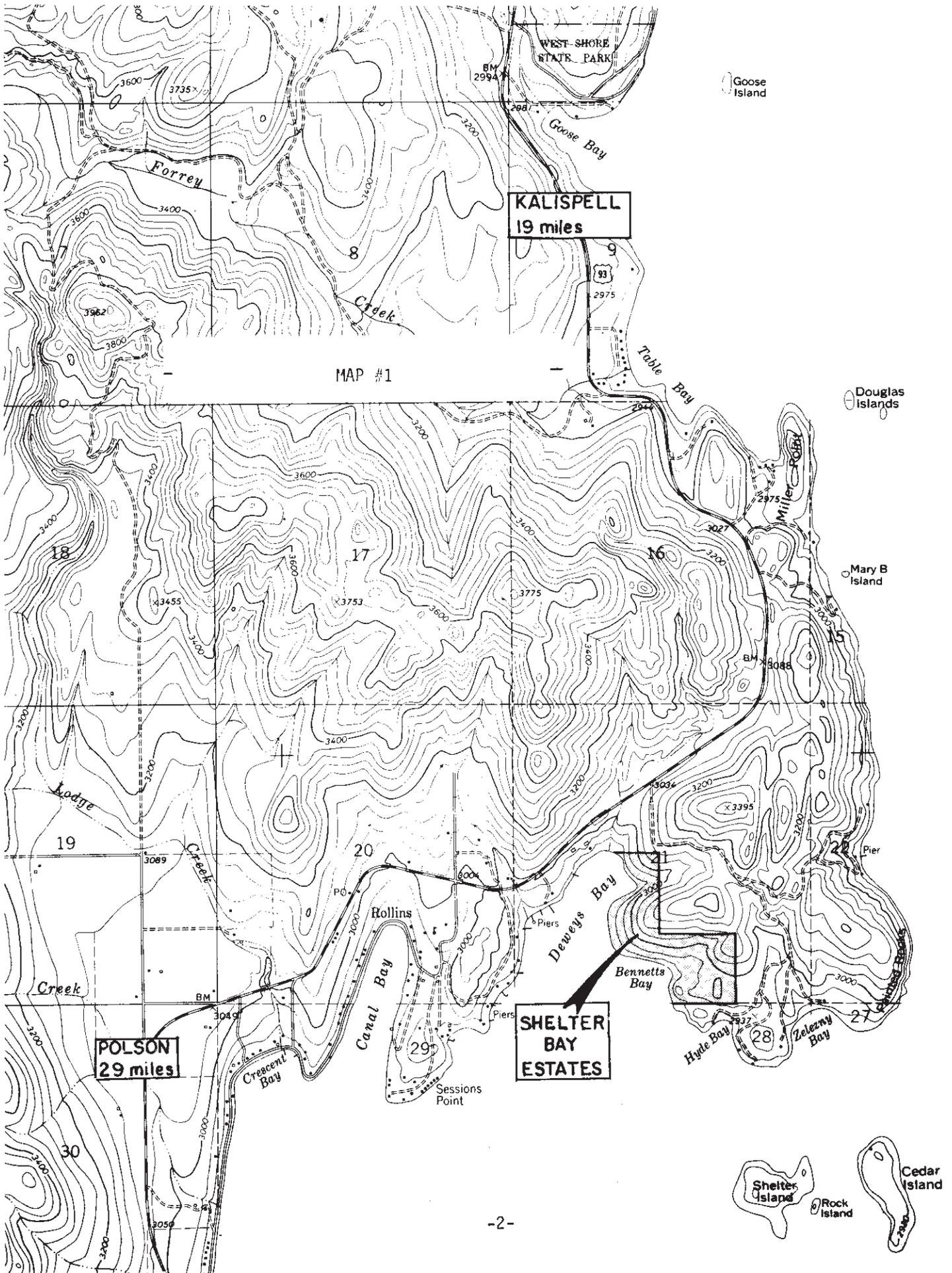
Pursuant to the Montana Environmental Policy Act, Section 75-1-101, et. seq., MCA, the Sanitation in Subdivisions Act, Section 76-4-101, et. seq., MCA, and the Water Quality Act, Section 75-5-101, et. seq., MCA, the following environmental impact statement (EIS) was prepared by the Montana Department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

DESCRIPTION

Shelter Bay Estates is a proposed subdivision situated about 1.5 miles east of Rollins, on the shores of Deweys and Bennetts bays in Flathead Lake (Section 21, Township 25 N, Range 20 W) (Map #1).

The 65.73 acre development contains about 3,100 feet of lake frontage. The proposal calls for creating 38 lots, ranging from 2.66 to .49 acres. The total acreage for lots would be 31.73 acres, with 5.5 acres in roads and 28.5 acres in parks, open space and common facilities. Twenty-one of the lots will be along the shoreline, with the remaining 17 lots situated east of the road running through the subdivision (Map #2)<sup>1</sup>.

The owners of the development Jack Green II and Ken Staninger, and their engineers, Stensatter, Druyvestein & Associates, all of Missoula,

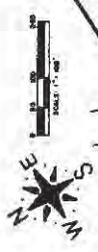


**KALISPELL**  
19 miles

**POLSON**  
29 miles

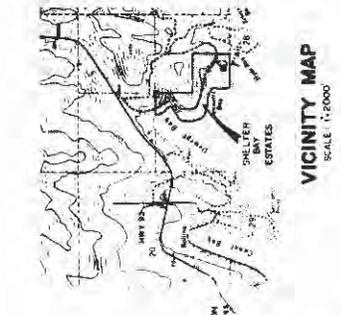
**SHELTER BAY ESTATES**

MAP #1

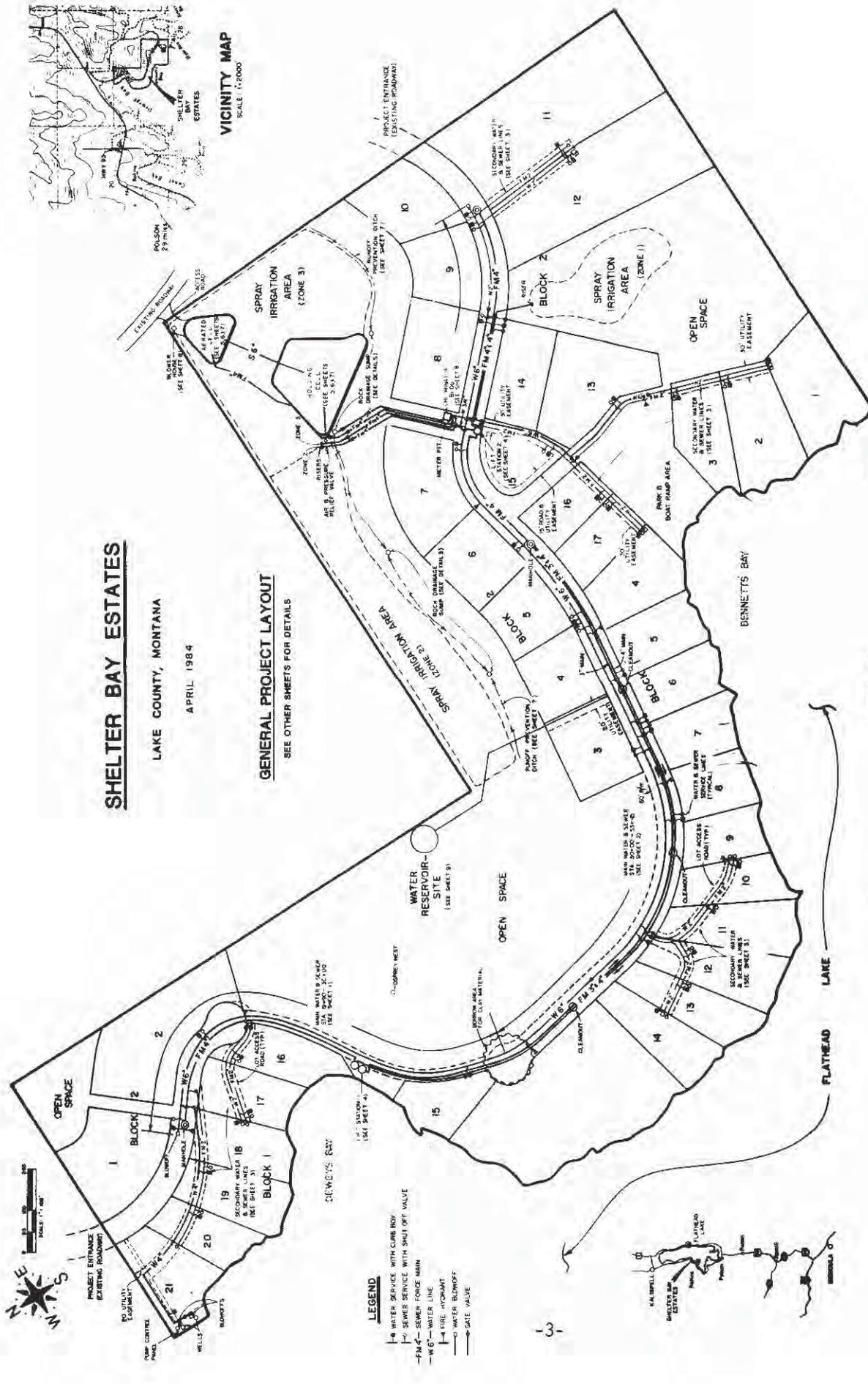


**SHELTER BAY ESTATES**  
LAKE COUNTY, MONTANA  
APRIL 1984

**GENERAL PROJECT LAYOUT**  
SEE OTHER SHEETS FOR DETAILS



**VICINITY MAP**  
SCALE: 1:2,000



- LEGEND**
- W- WATER SERVICE WITH CURB BOX
  - S- SEWER SERVICE WITH SHUT OFF VALVE
  - FM- FIRE FORCE MAIN
  - WM- WATER MAIN
  - FL- FIRE HYDRANT
  - WB- WATER BLOWOFF
  - WV- WATER VALVE

MAP #2

Montana, received conditional approval from the Lake County Board of County Commissioners for the proposed subdivision--then called Cedar Island Estates--on Aug. 16, 1983. Nearly the same proposal, under the new name of Shelter Bay Estates, was submitted to the DHES for review May 14, 1984.

### CURRENT ENVIRONMENTAL CONDITIONS

Prior to the purchase of the site by the developers, it was managed as timberland by wood products companies. The timber has been harvested at least once, and is now classified as second-growth, sawlog sized ponderosa pine and Douglas fir.<sup>2</sup> Due to the logging, the area is roaded, but because of the abundant understory of shrubs and grasses, there is little, if any, erosion.

The character of the land is unusual due to the lack of development along the shoreline. Lake side, recreational developments abut either end of the property, leaving the proposed site one of the last vestiges of undeveloped, privately owned shoreline in the area.

### THE PHYSICAL ENVIRONMENT

#### TERRESTRIAL AND AQUATIC LIFE AND HABITATS

Classified as whitetail deer winter range by the Department of Fish, Wildlife and Parks (DFWP)<sup>3</sup>, the site also provides food and cover for carnivores, such as bobcats, small game and non-game mammals, such as squirrels, rodents and porcupines. The area supports song birds, possibly game birds, such as ruff or blue grouse, and raptors, particularly ospreys.

The DFWP has identified the osprey as a "species of special concern." There is no legal implication to the designation, rather it is applied to wildlife that the department believes needs watching with respect to changes in the environment. For the osprey in the Flathead Lake area, the DFWP is concerned with: a) environmental contamination (principally pesticides) and b) retaining suitable nesting sites.<sup>4</sup>

Osprey nesting sites have been identified in the northern part of the proposed development. Taking the nesting sites into account, the developers included the following covenants in the subdivision's protective covenants:

Section 38. Wildlife Protection: It is well known that upon the premises in the designated wildlife buffer area osprey rookeries and nesting sites are present. No owner shall permit any persons nor shall any persons interfere, molest, harm or harass these birds or their offspring. All owners shall exert their best efforts to minimize human/animal interactions of any sort on the properties.<sup>5</sup>

And:

Section 19. Animals and Pets: No animals or fowl, domestic or wild, except cats, dogs or household birds, such as canaries, may be kept on any of the properties or in any of the structures thereon, and in no event may any animals or fowl be raised or cared for on a commercial basis, or to become a nuisance or annoyance to the neighbors. Any dogs and cats must be kept on their own lot or on a leash and under the immediate control of its owner.<sup>6</sup>

After analyzing the situation, DFWP wildlife biologist H. James Cross wrote:

With respect to Article X, Section 38 (Wildlife Protection), osprey appear to be quite tolerant of human activities. I have seen osprey nest on the steel overhead structures of bridges beneath which frequent vehicle, bicycle, and human passage occurred. There are nests in the valley just south of Kalispell very near heavily traveled roads. Some nests are adjacent to rivers with boating activities. Other nests are subjected to periodic agricultural activities. Osprey appear to accept these kinds of disturbances that are not directed at them but occur nearby and for a brief period of time at each occurrence. I can't say that osprey would tolerate and accept daily, prolonged disturbances that are associated with dwellings and summer recreational activities.

I have not been to the proposed development site and, therefore, don't know where the nest is located in relation to lots, roads, natural areas, open space, or the lake. It would be preferable to include the nest location in a natural area where major vegetation characteristics would be little changed and would provide a buffer to human activities that might occur beneath the forest canopy. The covenant is very general, but if the intent is upheld in practice, osprey may continue to use the site. Some deer use will continue on the site after development, perhaps enhanced seasonally on the irrigated effluent areas, if Section 22 (animals and pets) is maintained and enforced.

The combination of subdivision design and covenant restriction would best retain the existing osprey use. If designed to avoid recurring disturbance to osprey is impractical and the long term effect of the covenant is questionable, you could suggest that an alternative nesting site (artificial structure) be erected in a part of the natural area having the least anticipated human disturbance between May and August, the nesting and rearing period. The course of action should be : 1) design adjustment, 2) avoidance of disturbance during nesting-rearing season and 3) alternate site and disturbance avoiding restrictions.<sup>7</sup>

In considering the possible impacts of the proposed subdivision on the fisheries in Deweys and Bennetts bays, DFWP biologist Scott Rumsey said:

...As far as fisheries are concerned...there are a few concerns. The first is the surrounding shoreline, which attracts fall spawning lake trout. Eggs are deposited in these steep, rocky areas in November, and hatching occurs the following March and April. Any development or operations that would allow a significant amount of sediment or effluent discharge would impact those fish and their spawning habitat. Cutthroat trout seasonally frequent these shoreline areas as well. I would recommend that shoreline facilities, such as docks and boathouses, be kept to a minimum and multiple use encouraged.<sup>8</sup>

## VEGETATION COVER, QUALITY AND QUANTITY

The area of the proposed development has been managed as commercial timberland by wood products companies. It has been logged at least once and the trees are categorized as second-growth, sawlog timber. The predominant tree species are ponderosa pine and Douglas fir, with the related understory species including ocean spray, kinnikinnick and snowberry. The forest is on steep ground and generally dense, except for a small meadow east of the proposed boat ramp and parking area on the shore of Bennetts Bay.

Concern for preventing erosion during construction prompted the Lake County Commissioners, in their conditional approval of the subdivision, to require that all "...cut and fill slopes...be reseeded to establish a suitable vegetative cover."<sup>9</sup>

The developers, also concerned about the potential loss of vegetation, mentioned the following subjects in their protective covenants:

- A. Seeding and planting is required after the construction of any buildings;
- B. No "trees or other natural growth shall be cut or removed" except for building structures, roads or landscaping--however, all "timber and other material" that constitutes a "wildfire hazard" shall be removed within a radius of 35 feet from habitable structures;
- C. A 50-foot "natural vegetative buffer" shall be maintained between the high-water mark and development, and
- D. Lot owners "shall provide reasonable landscaping" within six months after completion of the construction of a dwelling, this includes sodding or seeding a lawn and planting shrubs and trees.<sup>10</sup>

The Lake County Land Services Department did question the provision concerning removal of trees and vegetation that might pose a wildfire danger:

...If the intention of this covenant is removal of all trees in the 35 foot area then, including dwellings, a significant area (approximately 20 per cent of a half acre lot) will be without shade, and may be more susceptible to erosion. Natural screening between many homes will be non-existent and development will be more visible from across the bay. It may be possible to modify this covenant to maintain some vegetation while still reducing fire hazard.<sup>11</sup>

#### GEOLOGY AND SOIL QUALITY, STABILITY AND MOISTURE

##### Geology

The Salish Mountains run north and south along the west shore of Flathead Lake. They are characterized by having gradual slopes and moderately smooth summits. Topographically, a semicircular ridge pattern runs in a northeasternly direction to Kerr Mountain where it attains an altitude of 6,200 feet. From there east and south-trending ridges descend to basins occupied by Lake Mary Ronan (3,300 feet) and Flathead Lake (2,893 feet).

During the Wisconsin stage of the Pleistocene epoch, the Flathead Glacier advanced from southern British Columbia through the Rocky Mountain Trench to the vicinity of Polson, where it created a terminal moraine. The east side of the moving wall of ice passed the ice-filled Swan Valley at Bigfork, overriding the north end of the Mission Mountains pushing ice to a point about 5,000 feet above sea level. From the Mission Divide, it cut diagonally down across the west side of the range to the valley floor. West of Flathead Lake (northwest of Lakeside, Montana) the ice reached a minimum altitude of 5,100 feet. Today's topography suggests the glacier moved in a southeasternly direction toward Rollins.

As the glacier moved down the valley, now occupied by Flathead Lake, the west margin crossed drainages west of Angel Point and Table Bay. At Rollins, the ice mass moved over a spur ridge toward Lake Mary Ronan.<sup>12</sup>

Geologically, the predominant rocks in the area of the proposed subdivision are in the precambrian Belt Series of the Piegan Group. More specifically, it is the P<sub>1</sub> Unit of the Piegan Group. This unit is a thin-bedded, laminated pale blue-green and pale green mud-cracked argillite, sporadically calcareous. Within the P<sub>1</sub> Unit are light gray limestone lenses and sparse 2-inch beds of coarse-grained white quartzite. Near the center are two 10-foot beds of grayish-red argillite. The upper 500 feet of the unit is a persistent pale blue-green to greenish-gray argillite and calcareous argillite weathering greenish gray and yellow gray. Locally, 2-inch pyrite cubes are abundant.

The P<sub>1</sub> Unit's thickness west of Flathead Lake is about 1,200 feet. Proceeding northwest from Rollins toward Kerr Mountain and north of Blacktail Mountain the unit expands to 3,000 feet thick.

The unit is a transition zone between the Ravalli and Piegan Groups.<sup>13</sup>

### Soils

The Soil Conservation Service's (SCS) Lake County soil survey is in its final stages of completion, and preliminary mapping information is available. In a report for the DHES, Bruce Bauman, a certified associate professional soil scientist, said there are two soil series present at the site, the Repp series and the Kingspoint series. "Accepting that the line is an approximation, and also accepting that soil boundaries are difficult to pinpoint," Bauman said, "it would still appear that irrigation zone #1 is on Kingspoint soils, and zones #2 and #3 are on Repp soils."

The Kingspoint series is a deep, well drained, very gravelly loam (in SCS terms, very gravelly denotes coarse fragment contents of from 35-60% by volume). This series is found on slopes of 15-30%, permeability is moderate, runoff is rapid, and the water erosion hazard is high if the soil is disturbed.

The Repp series is a deep and somewhat excessively well-drained loam, with the surface soil being gravelly (15-30% gravel), grading to extremely gravelly (more than 65% gravel) subsoils from 13-60" and deeper. Like the Kingspoint series, it has moderate permeability, runoff is rapid, and it also has a high erosion hazard if it is disturbed.<sup>14</sup>

#### WATER QUALITY, QUANTITY AND DISTRIBUTION

Flathead Lake is one of the largest freshwater lakes in the western United States and has been a geographical focal point since early inhabitants explored the northern Rocky Mountains.

Fed principally by the Flathead and Swan rivers, the lake supports a large recreational industry, as well as serving as an important water supply.

Local residents have become concerned about the water quality of the lake. Although interested persons may gauge water quality largely on clarity, lake scientists (or limnologists) measure and compare nutrient levels to determine how fast a lake is aging.

The problem centers around how fast the nutrients are accumulating in Flathead Lake. The rate of accumulation is referred to as eutrophication. A gradual process, the eutrophication of a lake progresses from the oligotrophic state (poor in nutrients), through mesotrophic phase (between poor and rich) to the eutrophic stage (rich in nutrients).

According to recent scientific information, Flathead Lake is rapidly becoming enriched with nutrients, as indicated by large growths of algae, transcending from the oligotrophic to mesotrophic phase or proceeding into middle-age.<sup>15</sup>

Phosphorus is the nutrient that controls the growth of algae in the lake. Besides precipitation and dust deposited directly in the lake, the main sources of phosphorus are domestic and municipal wastewater, including household detergents and particles of soil eroded from the land. The amount of phosphorus entering Flathead Lake each year has increased because

of the increase in the number of people living in the basin and in the area of land surface that has been disturbed and cleared of protective vegetation.<sup>16</sup>

To control aging is to control algae; to control algae is to control phosphorus, and to control phosphorus is to treat wastewater and control erosion. Although the aging of the lake cannot be stopped, a concerted effort can slow the process, improve the condition and lengthen the lifespan of the lake.<sup>17</sup>

1) Sewage Treatment Facility: Shelter Bay Estates will be served by a central sewage collection and treatment system consisting of gravity and pressure sewer mains, an aerated lagoon with two cells, lagoon storage cell and spray irrigation of forested land. The system is designed to serve 43 lots or residences, although the applicant is only seeking DHES approval for platting 38 lots. The system will be owned and operated by either a Homeowner's Association or a private entity. The exact mechanism of ownership and control has not been finalized, but will be resolved prior to DHES final approval.

The sewage collection system employs a septic tank and sewage ejector pump at the majority of the homesites.<sup>18</sup> A few lots will be able to utilize gravity flow to the collection main. The individual septic tanks and sewage pumps will be under the control and maintenance of the system operator. The sewer mains are small diameter gravity flow and pressurized pipe which convey sewage through two pumping stations to the treatment facility.

The sewage entering the aerated lagoon will have already received primary treatment via septic tanks on each lot, thus is of a lesser strength than raw sewage. As the sewage flow reaches the aerated lagoon, it may be directed to either of two cells or forced to flow through both cells in route to the storage pond. Air is introduced in both lagoons to effect biological treatment and increase dissolved oxygen content of the sewage so that odor will be minimized. The storage lagoon provides winter detention of the treated sewage effluent until it can be applied to the land during the growing season.

Sewage effluent from the storage lagoon is transported to a filter and disinfection facility where chlorine is added to destroy any remaining bacteria present. From that point it is either pumped or flows by gravity to one of three spray irrigation zones (Map #2). The application rate will be limited to prevent excessive infiltration, saturation and subsequent runoff from the sloping forest soils. The spray irrigation system design is based on an on-site survey and computer modeling conducted by Dr. Steven W. Running, an authority in the field of forest stand transpiration.<sup>19</sup> Actual application of the sewage effluent provides a balance between the expected maximum annual precipitation event, projected evapotranspiration and a minimal amount of percolation into the soil. It should be noted that the quantity of treated sewage entering the soil profile is minuscule compared to a standard soil absorption drainfield which would typically transmit 44 times the quantity of sewage effluent per square foot of surface area. As an added safety measure, a lined collection ditch will traverse the length of zones two and three for the purpose of intercepting any runoff due to excessive precipitation or malfunctioning equipment. A buffer zone of 150 feet is maintained between the spray irrigation zones and any existing or proposed residences.<sup>20</sup>

Numerous test holes have been excavated in the spray irrigation zones and lagoon area. Soil testing indicates the area is acceptable for spray application of sewage and meets all applicable requirements of Recommended Standards for Sewage Works and DHES guidelines. The EPA process design manual 625/1-81-013, entitled Land Treatment of Municipal Wastewater, published October, 1981, has been utilized as the primary design reference for the spray irrigation system. Monitoring of system operation will be afforded through shallow wells within the spray irrigation zones and a deep monitoring well downslope from the sewage treatment lagoons. The procedures for monitoring are not yet final, but a sampling frequency will be established through the O&M Manual. Nitrogen, phosphorus and chloride concentration of samples will be determined by a certified lab prior to initial use of the sewage treatment system and periodically thereafter to determine compliance with groundwater standards.

The potential impacts of sewage nutrients--especially phosphorus--upon Flathead Lake have been investigated. On-site soil samples have been

analyzed to determine their ability to attenuate phosphorus. From phosphorus absorption isotherms, the DHES has modeled the long term impact of nutrient migration to the lake. This is a very inexact science due to the numerous variables such as subdivision buildout, actual occupancy, phosphorus concentration of sewage, varying soil interactions and geohydrologic flow patterns. However, even using conservative estimates, the system exhibits an acceptable useful life during which the DHES does not expect nutrient impact to Flathead Lake.

2) Water Supply System: The public water system serving Shelter Bay Estates will consist of two deep groundwater wells, two small steel storage tanks and associated water mains and service lines. Water pressure will be maintained by the water tanks which will be buried, and will be at an elevation well above all lots. Domestic water supply and perhaps very limited irrigation water demands will be provided by the system. There will not be enough water to irrigate lawns or gardens. The system will not be capable of providing fire flows to pumper-type fire trucks. There will be small hydrants, however, that could be used for filling a tank truck during a fire. During power outages, the water storage tanks should be capable of providing enough water for domestic needs for at least 24 hours.

Even though the proposed subdivision is situated next to Flathead Lake, an adequate quantity and quality of groundwater appears difficult to obtain. One well more than 900 feet deep has been drilled, but produces only a small quantity of water. The water has an iron content of 0.60 milligrams per liter (mg/l), which is twice the recommended limit of 0.3 mg/l. Although the water is safe for human consumption, the high level of iron may stain plumbing fixtures or perhaps discolor laundry.

Additionally, the DHES has expressed reservations to the project engineer over the location of the existing well. The well was drilled down gradient from the sewage treatment ponds and effluent irrigation fields.

The developers hired a hydrologist, Robert C. Winegar, of GEOPLAN, INC., Missoula, Montana, to assess the suitability of the well site. The resulting investigation and subsequent hydrological report concluded that:

The bedrock offers an impermeable barrier to the movement of water from the ponds (sewage treatment) toward the well. Two factors discussed...allow this conclusion: 1) (The) cohesive nature of the structural surfaces and 2) orientation of the surfaces.

Although the well site chosen is topographically below the ponds, it is of no consequence in this particular case since the production zones are deep (241 feet to 962 feet) and permeable zones are absent from the ponds to the well. Soil transport is possible, but the likelihood of contamination is nil. The distance involved (approximately 800 feet) and the expected percolation rate indicate ample filtration time and distance. The well is grouted to 141 feet, therefore, surface waters will not enter the well.<sup>21</sup>

The DHES, in turn, had the hydrological report reviewed by a consultant, M.K. Botz, P.E., of Hydrometrics, Helena, Montana. Botz said:

It is my understanding that the relationship of sewage disposal facilities to the water supply well is of concern due to the long-term contamination potential.

The water supply well is located about 100 feet from Bennetts Bay. The well is the following distances from potential pollution sources:

1) Sewage Spray Irrigation Area (Zone 1)	500 feet
2) Sewage Spray Irrigation Area (Zone 2)	600 feet
3) Sewage Holding Cell	800 feet
4) Sewage Aeration Cell	1100 feet
5) Forced Main Sewage Line	50 feet

Topographically, surface drainage from the sewage holding and aeration cells and from the spray irrigation areas is toward the water supply well.

The well is reported to be grouted with cement from the ground surface to 141 feet. The well annulus is reported to be 1.7 inches

(12-inch drill hole minus 8-5/8 inch casing). Based on the driller's log, the well is uncased below 141 feet as no casing or perforations are recorded below this depth. The reported static water level is 23 feet and the pumping water level at 30 gallons per minute (gpm) is 368 feet.

This well has a drawdown of 345 feet and a well specific capacity of 0.0029 gpm/ft. after 28 hours of pumping. This is a very low yielding well, but such low yields are not uncommon in this area.

Based on the driller's log, water-bearing zones were encountered in the well at 118 to 129 feet, 241 to 262 feet, 782 to 820 feet and 820 to 962 feet. At 30 gpm, water enters and cascades down the borehole to the pumping water level of 368 feet. At 25 gpm, the pumping test showed the water level to remain above the 241 to 262 foot water zone for 16.5 hours.

The major concern about this water supply well is potential contamination of the well by bacteria, virus, nitrogen, metals and organic compounds associated with the sewage disposal system. The bedrock has joints and cleavage planes that potentially could transport treated sewage to the well.

There are several factors that may help prevent pollution at this well site.

- 1) The well has been grouted to 141 feet, thus sealing off infiltration of surface water.
- 2) The final hydrostatic head in the well (23 feet deep) suggests the water-bearing zones are confined.
- 3) The water-bearing zone at 118 to 129 feet has been sealed off and the water-bearing zone will act as a barrier to downward movement of contaminated water.
- 4) Permeability of the rock is very low. This will lessen the

movement of water through the rock.

There also are several factors that must be considered that could create conditions that would allow pollution of the water well. These are:

- 1) The bedrock has joints and cleavage planes, and could have fractures that would allow movement of contaminated water through the bedrock.
- 2) The cement grout seal could fail and could allow movement of contaminated water into the well.
- 3) Drawdown in the supply well is large, thus creating a large groundwater gradient toward the well during pumping.
- 4) Drainage from the sewage treatment and land application areas is toward the water supply well.
- 5) Fractured rock would do little to remove nitrate or dissolved organic compounds from percolating water. Also, virus and bacteria can readily move in openings in bedrock.

There is no way to technically predict whether or not the water supply well will become polluted. In my opinion there is a long-term risk that this well will become polluted. The close proximity of the well to sewage treatment and disposal facilities and the all too common cases of sewage pollution of wells in bedrock systems certainly must be considered in assessment of this situation. I believe the risk of well contamination in this case is low, but is definitely not zero.

The geological report by Winegar contains little definitive information on the water transmitting ability of the bedrock. Limited surface exposures of bedrock and complex structural and lithological features make it virtually impossible to predict subsurface water movement. Winegar's report does show the exposed bedrock is not

extensively fractured or faulted, but mapping of a few exposures of bedrock cannot be relied upon to predict deep groundwater flow paths.

Additional factors that must be considered for this well are:

- 1) The borehole below 141 feet is uncased. Large drawdowns that will occur when pumping may cause caving of the hole, thereby potentially preventing removal of the pump. This would render the well unusable.
- 2) The aquifer test shows a very large increase in drawdown (182 feet) caused by increasing the pumping rate from 25 to 30 gpm. Based on the Recommended Standards for Water Works (Ten State Standards), the well should not be pumped at more than 20 gpm. This pumping rate would prevent cascading flow into the well bore from the 241 to 262 foot water zone.

Based on my review of this project, it is my opinion the water supply well has a small but definite long-term risk of becoming contaminated from treated sewage. This water supply does not meet the water sources requirements (Section 3.2.1) of the Ten State Standards which requires the groundwater source to equal or exceed the maximum day demand and equal or exceed the design average day with the largest producing well out of service. This water supply also does not meet the requirement that a minimum of two sources of groundwater be provided.<sup>22</sup>

Because of the department's concerns, the following alternatives were considered:

- 1) Prior to approval, accept the quality and quantity of the existing well, and require the developers to drill additional well(s). The additional well(s) would be tested for quality and quantity to verify that the total developed water supply is adequate for domestic use.
- 2) Issue a conditional approval now for a domestic-use water

supply and condition the approval on the drilling and proving of a second well. The conditional approval would include minimum quality and quantity limitations as well as a time frame for completion of the well. If either the quality or quantity prove unacceptable, another well(s) would have to be drilled until one proved acceptable or an alternative source is found.

- 3). Deny the existing well and require that another, more acceptable source(s) be developed.

The first alternative was rejected because it has been demonstrated by drilling of the first well that water of adequate quantity and quality is available for domestic purposes. Prospective lot buyers will be advised of the potential iron problems and of the limited water quantity through the approval documents.

The third alternative was rejected because no clear basis for denial exists. The high iron content does not pose a health risk. The limitation of the water supply to provide water only for domestic uses is undesirable, but cannot be used as a basis for denial. The concern over the location of the existing well cannot be used as a firm basis for denial because of the extreme difficulty in technically proving the site is inadequate.

The second alternative appears to be the best solution. The DHES has the regulatory authority to provide conditional approvals.

Operation and maintenance of the water system should not pose any unusual problems because it is a relatively straightforward and simple system. A certified operator will have to be available at all times, however.

- 3) Storm Drainage Impacts: The water quality of Flathead Lake could be impacted by stormwater runoff especially during extensive construction periods. The developers have submitted a plan for storm water runoff. The design employs overland flow from outsloped roadways to control sediment and debris transportation for the majority of the area. If runoff

is not concentrated in borrow ditches, this should prove to be effective. The proposed roadcut in an area of steep terrain and the boat ramp area will utilize subsurface sumps to dispose of collected runoff.<sup>23</sup>

The Lakeshore Protection Act limits the amount of disturbance which may occur near the lakeshore. It will be each lot owner's responsibility to comply with applicable standards of local government and homeowner covenants regarding architectural control. Construction of the sewage lagoon system will require extensive earth movement and standard construction methods to reduce erosion and sediment transport will need to be employed. The use of earthen berms and straw bails to collect sediment may be necessary during the construction period.

#### AIR QUALITY

According to the developers, most of the lot owners will be building recreational homes for seasonal use. The area is generally well ventilated and the use of wood burning stoves and fireplaces should not pose air quality problems.

The removal of trees and shrubs and the resulting production of slash will require disposal. In many instances this will be done by burning. State law requires that any persons who burn more than 100 acres of forest slash a year obtain a permit. Although it appears that no one in the proposed development will be required to obtain a burning permit, the state does require that persons planning to burn slash during the months of September through November check to make sure atmospheric conditions in their area are conducive for incineration. This can be done by using a toll-free number (1-800-225-6779) to call air quality representatives who will indicate whether conditions are right for burning. Open burning is prohibited during December, January and February, however, during the rest of the year, burning may occur as long as the local fire control authority has been notified.

#### AESTHETICS

The proposed Shelter Bay Estates is one of the largest undeveloped, privately owned lakefront properties on Flathead Lake.<sup>24</sup> Although from the lake or opposite shore the property may give the appearance of being undisturbed, native woodland, closer inspection reveals it has been logged at least once. However, any previous disturbances from logging have been almost eliminated by second generation timber and understory growth.

The response to the proposed development from interested citizens and adjacent property owners indicates the area is looked upon fondly as a remnant of the undisturbed natural forest shoreline that once bordered Flathead Lake. These persons are concerned that the proposal will irrevocably alter this quality.

The changes to the property from the subdivision will be lasting, however provisions have been made by Lake County and the developers to control and reduce impacts to the aesthetic qualities of the area.

In their conditional approval of the proposed development, the Lake County commissioners required the following:

- A. All cut and fill slopes for interior roads shall be reseeded to establish a suitable vegetative cover, and drainage facilities shall be provided to insure that runoff will not cause erosion or enable sediment to reach the lake;
- B. No buildings shall be built on slopes greater than 25 per cent;
- C. A final plat may not be approved if design and construction plans are not approved by the county commissioners;
- D. Boathouses must be screened from view on the lake and across the bays, and a valid Lakeshore Construction Permit from the county shall be obtained prior to any construction or removal of vegetation within the lakeshore protection zone;
- E. A natural vegetative buffer shall be maintained between the lake and 50 feet landward (starting at the high water mark) of the

lake to provide drainage and screening;

- F. The covenants shall not be "waived, altered, abandoned, terminated or amended in whole or in part" except by review by the planning board and approved by the Lake County commissioners, and
- G. The natural area and lakefront situated between the cul-de-sacs shall be limited to pedestrian and swimming only, no structures shall be located on the land or out in the lake in this area.<sup>25</sup>

Most of the conditions mentioned by the commission were addressed in the developers' restrictive covenants. Additionally, the covenants also mentioned the following items:

- A. Under the provisions for an Architectural Control Committee, the approval of construction plans include the stipulation that "...Approvals may be based on engineering, architectural or purely aesthetic grounds.";
- B. When a lot owner builds a new structure, he or she shall, within a reasonable period of time, "seed, plant or landscape" to prevent erosion or the creation of a nuisance;
- C. As previously mentioned, no trees or other natural vegetation shall be cut except for reducing the possibility of "wild fire;"
- D. Docks, wharves or swimming platforms shall be limited in number and must have the approval of the Architectural Control Committee and be in compliance with state and local laws;
- E. Owners shall be responsible for the control of noxious weeds, and
- F. Upon the completion of a residential structure, the owner has six months to provide "reasonable landscaping," such as planting lawns, shrubs and trees.<sup>26</sup>

#### ARCHAEOLOGICAL AND HISTORIC SITES

Although there are no verified archaeological or historic sites situated in the proposed development, the Flathead Lake area has a "high cultural resource potential."<sup>27</sup>

The state computer file of archaeological and historical sites lists two prehistoric sites near the development. Due to the fragile nature of these sites, the precise locations are kept confidential. Generally however, one site is west of Deweys Bay and the other on the east shore of Indian Point.

In discussing the anthropological aspects of the Rollins area, Dr. Carling Malouf, Department of Anthropology, University of Montana, said:

...A dead tree just along the shore (of Canal Bay) was said to have once been adorned with an Indian platform burial. If true, it is unlikely it was Kutenai or Salish since there are no records of above-ground burials for these people. The Blackfeet would have been the nearest possibility. Harry Odle, who ran a museum just south of Rollins, collected projectile points and other specimens along the shoreline of Flathead Lake. Artifacts can be found as high as 135' above the present lake level.

Essentially, what we have around Flathead Lake is that the higher the terrace area...material is found, the older it is. As the outlet to the lake has worn through the moraine at the south end of the lake, the lake levels lowered too. The present shoreline yields materials dating back to about 1400 or 1500. Thus, if I were to look over the Deweys Bay area I would want to examine the terraces.

Burials have been found in rock outcroppings in the vicinity of Rollins. There are no surface signs, so there are possibilities that they could be accidentally uncovered in any "development" project. Such burials were made by Pend d'Oreille Indians when they occupied the area before 1850. The Kutenai (sic) are newcomers into the Flathead Lake area.<sup>28</sup>

In a similar analysis by David Schwab, archaeologist/anthropologist for the Historic Preservation Office, Montana Historical Society, he concluded by advising:

Given the known occurrence of an archaeological site in the area of the proposed project, and the high cultural resource potential for the Flathead Lake area in general, we recommend that an intensive cultural resource survey be conducted in all areas of proposed disturbance prior to the initiation of construction activities in this sensitive area. Such work should be directed toward:

1. The location, recordation and evaluation of (the site) and an assessment of potential impacts to the sites as a result of subdivision construction, and
2. An intensive investigation to determine if other unrecorded cultural resources may be located in the project area.<sup>29</sup>

Thain White, a resident of Dayton, Montana, and one of the persons instrumental in identifying the Rollins site, said he knew of no substantiated historical or archaeological sites in the area of the proposed subdivision. However, he did note that "Dewes Lumber Company" reportedly operated a sawmill between 1892 and 1900 at the head of Dewes Bay. The mill was later moved to Polson around 1909. White believes this was the second mill to operate on the shores of Flathead Lake.

Although he has never inspected the site, and has only seen "background" photos and heard others refer to the mill, White did say, "The exact location of where Dewes had his mill perhaps could be located at the high water mark or below that point in the lake when the elevation is below 2,893 feet."

White concluded by adding, "Indeed it (Shelter Bay Estates) is in a rich archaeological area and I believe a sharp eye should be kept open when such things as roads, water lines and basements are constructed...."<sup>30</sup>

#### UNIQUE, ENDANGERED OR LIMITED ENVIRONMENTAL RESOURCES

The forested east shore of Deweys Bay and Bennetts Bay collectively comprise one of the largest tracts of undeveloped shoreline on Flathead Lake today. This unique quality would be lost with development.

Although not an endangered species, the osprey is of special concern in the Flathead Lake area. It does have the ability to live near human habitation, but does require some seclusion--particularly with respect to nesting. The developers have proposed to keep a natural "buffer" area between building areas and established osprey rookeries.

Flathead Lake's size and quality of water make it a prized recreational resource. However, it is threatened by the very people who value its qualities. Nutrients, principally phosphorus, from such human activities as forest road building, timber harvesting, municipal sewage effluent and individual septic tanks are changing the quality of water in the lake. The state can control activities that are covered by state laws, but it will take a concerted effort on the part of all persons living in the Flathead Basin to slow this change to the lake's water quality.

Although the proposed development will change the land-use from a natural to a recreational residential setting, it will be in keeping with the general use of shoreline property in the Rollins area. As for the environmental impacts of sewage disposal, obtaining drinking water and control of runoff water, if the developers follow plans approved by the DHES, they will be in compliance with Montana state laws pertaining to pollution control.

#### DEMANDS ON ENVIRONMENTAL RESOURCES OF LAND, WATER AND ENERGY

The proposed development will forever change the character of the land. It will change from a natural forest setting to a seasonal recreational community. There may also be some persons who chose to live year around in the development. This change will be generally consistent with the present use of lake shore property in the Rollins area.

#### THE HUMAN ENVIRONMENT

## SOCIAL AND CULTURAL UNIQUENESS AND DIVERSITY

There appear to be four prominent groups of people living on or in close proximity to Flathead Lake. Those groups include:

- 1-Seasonal homeowners who live in homes, condominiums and cabins for varying periods throughout the year. The greatest occupancy occurs during the summer when the amenities--such as motorboating, fishing, water skiing, wind surfing, sailing and swimming--are greatest.
- 2-Included in the group of seasonal homeowners are retired persons, who have the option of being able to extend seasonal occupancy or in some cases live in the residences year around.
- 3-Another group of persons are those who live on or near the lake, but work elsewhere in the area.
- 4-The last are persons who live and work in close proximity to their homes, included in this group would be persons who are in agriculture or local businesses.

Collectively, these persons and groups form the social fabric of the Flathead Lake community. The seasonal homeowners provide a great social and economic influence on the community during the summer months. The recreational dominance of the summer community gives way to a combination of retired persons, agriculture people and people who work in the local business community during winter months.

It is likely that the type of persons interested in buying property in Shelter Bay Estates will be a combination of seasonal homeowners and retired persons. These persons should socially and culturally be similar to others in these groups that presently own property in the area.

## DEMANDS ON PUBLIC SERVICES

### Schools

The developers state in the subdivision submittal that there will be few if any school-aged children who will live year-round in the area.

The Lake County planning staff concurs with the developers that the market will likely be for recreational homes, with few school-aged children living in the proposed subdivision. If future owners have grade school children (kindergarten through seventh grade), they will attend elementary school in Dayton. A school bus travels from Dayton to the intersection of U.S. Highway 93 and the main road leading to Shelter Bay Estates. Any high school children will have to take a bus from Rollins to Polson.

According to county planners, the Lake County superintendent of schools believes, due to location and value of the lots, there will be few children added to local schools. The Dayton grade school can accommodate about 10 more students and the Polson High School about 20 more pupils.<sup>31</sup>

#### Fire Protection

The proposed development is in the area served by the Rollins Volunteer Fire Department. It is not an established county fire district and therefore has no taxing authority. The department is funded through donations and its resources and equipment are limited.

The subdivision proposes to have small fire hydrants situated within 500 feet of each lot, with a capacity of being able to fill a tank truck during a fire. The water system will not be capable of providing water flows to pumper trucks.

The main access road is narrow and about a mile long. If this road is not upgraded, it will hinder access by fire department equipment. As conditions for ultimate approval, the Lake County Commissioners require that the roads leading to the subdivision and the main roads within the development be upgraded and constructed to approved county standards. Additionally, the commissioners have required that the two roads servicing the northern and southern portions of the development be connected to form a through road. This will enable fire and other emergency equipment to move freely through the area.<sup>32</sup>

## Police Protection

The proposed development will be served by the Lake County Sheriff's Department, headquartered in Polson. Due to the distance and seasonal nature of summer homes, theft may become a problem in off-season times of the year. If theft or other law enforcement problems occur as the result of the development, it will place an added burden on the sheriff's department.<sup>33</sup>

## HEALTH AND EMERGENCY SERVICES

Medical facilities are available 23 miles north in Kalispell or 30 miles south in Polson. Kalispell has a helicopter available 24-hours a day for medical emergencies, in addition to vehicle ambulances. Big Fork and Polson also have ambulances on-call around-the-clock.<sup>34</sup>

Solid waste generated by residences in the proposed development--principally garbage--will be disposed of on an individual basis. The county has a 40-cubic yard container at Proctor, Montana, about eight miles away. Homeowners will be responsible for transporting solid waste to this site and disposing of the material.

Other public health considerations concern the proper installation and operation of potable water and sewage disposal systems. Both are discussed in earlier sections of this EIS.

## ROADS

The access road for the southern part of the subdivision (29 lots) is by way of a 30-foot county easement off the U.S. Highway 93 for approximately 2,700 feet, it then follows an unimproved roadbed across Burlington Northern (BN) property for about 1,900 feet to the boundary of the subdivision.

The road in the county easement only has a 12 to 14-foot wide driving surface and, according to county analysis, is inadequate in its present condition to serve the proposed subdivision. The road needs to be upgraded

to at least a 20-foot surface (county standard is 26 feet) and additional right-of-way is necessary.

The road across the BN land is not a legal easement and generally is overgrown with grass and weeds.

The road serving the northern portion (nine lots) crosses adjacent private property for 1,000 feet.

Both roads terminate with dead-end cul-de-sacs. Lake County planners are concerned with these types of roads with respect to traffic problems that might arise from emergency situations. This concern is not only from the standpoint of emergency vehicles accessing the homesites, but also for the congestion that could arise from residential traffic. This would be eliminated if the roads were connected, providing a through access to the development.

A county analysis indicates that the land between the cul-de-sacs is steep, and would require a considerable amount of "cut and fill," but a reasonable grade could be constructed. Most of the proposed road would be shielded by trees, but about 200 feet might be visible from across the bay. The proposed road would be built below the land set aside for the ospreys.<sup>35</sup>

In its preliminary approval, the Lake County Commission required the developers to:

- Obtain legal and appropriate easements and rights-of-way for authorizing access across adjoining lands in perpetuity,
- Agree in writing to improve all access roads located outside the subdivision, excluding that portion within the 30-foot county easement, to conform to:
  - A right-of-way of at least 60 feet,
  - A driving surface of at least 20 feet,

- Subbase and base materials to be determined by the county commission and
- Arrange for maintenance of these roads and submit a maintenance agreement for final review and approval.
- For those access roads it wants the county to accept as deeded right-of-way within the 30-foot county easement, the following specifications must be met:
  - The right-of-way must be at least 60 feet wide,
  - The surface must be at least 26 feet wide and
  - The subbase and base materials determined by the county commission prior to construction.
- The development's interior roads shall be connected for year round access and built to the following standards:
  - The location shall be staked and subject to final review by the planning staff and commissioners,
  - The road right-of-way shall be a minimum of 30 feet wide,
  - The driving surface shall be a minimum of 20 feet wide,
  - The subbase and base will be determined by the county commission prior to construction,
  - Drainage facilities shall be provided to insure runoff is directed off the road and will not cause an increase in erosion and sedimentation,
  - Cut and fill slopes will be reseeded and
  - Construction shall take place between October 15 and April 1.

- The final site plan for the lots, roads and improvements shall be subject to final review by the planning board and approval by the county commissioners.
  
- Other interior roads, excluding driveways, shall conform to right-of-way and driving surface widths as shown on the preliminary plat, except that no driving surface shall be less than 20 feet. The specifications for subbase and base materials shall be determined by the county commission.
  
- Common driveways shall be shown as easements on the final plan. These easements shall be a minimum of 20 feet wide, and the developers will be responsible for the construction of all such driveways.
  
- A written agreement between the developers and the Montana Department of Highways (DOH) shall be submitted specifying the developer's responsibility to improve the highway approach within the conditions outlined by the DOH.<sup>36</sup>

The Lake County Commissioners provided variances to allow access roads outside the subdivision--but within the county easement--and the main access road within the subdivision to have 20-foot instead of 26-foot driving surfaces, and allowed the main access road connecting the two cul-de-sacs to have a surface of 22 feet.<sup>37</sup>

#### RECREATION

The recreation facilities in the development are to be private and include 21 acres of natural area, six acres of open area and .5 acres of lakefront park. The open area is to include tennis and basketball courts. The lakefront park is to include a common dock, picnic facilities, vehicle and boat parking.

There are no designated county parks along the west shore in this area. There is the West Shore State Park approximately four miles away at the north end of the Lake County.<sup>38</sup>

Shelter Bay Estates will increase the recreation use of both bays, however even though there will be greater use, the nature of recreation will be in keeping with the types presently taking place in the area.

### ECONOMICS AND TAXES

According to a Lake County analysis, if the final approval is obtained from the county and the lots are placed on the market, taxes will increase. Taxes will jump substantially once homes are built. However, if the developers can demonstrate the property is not as valuable as the assessment indicates, due to such things as not being able to sell the lots within 5 to 10 years, then they may be eligible for a discount of 30 to 50 percent of the taxable value.

The report continues by stating that it is generally accepted that most residential developments--over a period of time--do not pay for the resulting demands on public services. Commercial and industrial development are the large taxpayers that offset this imbalance. However, recreation home development is considered to be more in balance with the tax-service relationship because people generally do not live in the area year round and do not place as large a demand on school services.

The analysis concluded by saying:

In light of the tax status, it appears that the local services that will be most affected will be the road department and Sheriff's department. The Sheriff's main source of funding is out of the general fund. The estimated taxes at full development will probably not cover the costs of these services, especially if the county has to accept more roads for maintenance and the Sheriff is burdened by problems in the area.

If the county is responsible for re-building the main access road to the development to provide adequate access, the cost will far exceed projected road revenues from this project for many years to come.<sup>39</sup>

## EFFECTS ON AGRICULTURE

The timber on the proposed development site is classified as second-growth sawlogs. Changing the land-use from commercial timber to recreational will take 65.73 acres out of timber production, however compared to the vast amount of governmental and private timberland in the area, the loss will not be felt by the timber industry.

## INDUSTRIAL AND COMMERCIAL ACTIVITY

Local commercial establishments and restaurants will benefit from the additional development, as will the construction community during the building phase of the subdivision.

## LOCALLY ADOPTED ENVIRONMENTAL PLANS AND GOALS

Shelter Bay Estates (formerly Cedar Island Estates) has generated a great deal of public interest. The proposal has been the source of extensive review by Lake County planners and elected officials, and interested members of the public.

After receiving the initial application (Cedar Island Estates - 61 lots), the Lake County Planning Board notified adjacent landowners of the proposal. On June 21, 1983, an information meeting was held in Rollins to explain the provisions of the development to interested persons. The information derived from this meeting was incorporated into the planning board's recommendations that either 38 lots, connected by a through road, or 20 lots, if the existing roads were not connected, be preliminarily approved. The Lake County Commission reviewed the minutes of the hearing, and on July 25, 1983, sent the matter back to the planning board after it received a revised proposal from the developers recommending number of lots reduced from 61 to 49. The planning board reaffirmed its original recommendation and returned the matter to the commissioners. On August 16, 1983, the Lake County Commission approved the preliminary plat for 38 lots. This conditional approval included 17 provisions and granted three variances. Included in the provisions was the requirement that the proposed development receive the necessary approvals from the DHES.<sup>40</sup>

In its consideration of Shelter Bay Estates, county planners said:

Some of the area is quite steep and some more gently sloping near the lake. Existing developed areas are concentrated on Crescent and Canal Bays. Some parcels in these areas and the Rollins Townsite itself were platted over 50 years ago. Below is a chart showing parcel size and lake frontage lengths for lakefront lots in Sections 20, 21, 22, 27, 28 and 29 T25N, R20W (includes all 5 bays).

Size (acres)	# of lots	% of total #	Frontage length (ft.)	# of Lots	% of total #
0 - .5	54	40	0 - 50	39	30
.51 - 1	34	26	51 - 75	13	10
1.1 - 3	22	17	76 - 100	35	27
3+	22	17	100-	45	33
	132	100%		132	100%

Interior parcels (not including Rollins Townsite) were larger with less than 20% being under 1 acre in size as opposed to 66% of lakeshore lots being less than an acre. Fifty-four percent of interior lots were between and 5 acres in size.

The proposed development is for lots averaging .5 acres in size with 100 foot frontages. This is not inconsistent with many of the lots in the area. It is proposed that each 2 lots share a dock.

Therefore some of the crowding evident in lakeshore areas such as Canal Bay should be minimized. However, the subject parcel is steeper than most of the surrounding developed small lots, limiting the developable area on each lot. Even though individual drainfields are not proposed for lots, the steep topography could contribute to crowdedness when driveways and residences are constructed.

Many of the lots have limited buildable area and long, steep driveway access. This may cause problems for normal access to the sites, especially during winter, spring thaw, or rainy periods. This will also hinder emergency access to the lots.

Not all...concerns indicate that a significant safety hazard exists, but it does show the marginal nature of much of the property for conventional homesites. Because of this, consideration should be given to designating specific building sites if this project is approved.<sup>41</sup>

In conjunction with these comments and concerns the Lake County Commissioners stated in their preliminary approval:

The final construction plans for drainage facilities shall also address the following:

- a. The plans to control run-off on all of the roads, driveways and building sites.
- b. An estimate of the amount of run-off from landscape alteration in the development, as compared to the estimated amount of run-off from the site in its natural condition.
- c. The potential for the development, in its construction phase and at completion to cause increased sedimentation into the lake.
- d. The plans to avoid increased sedimentation in the lake.

The final draft of the restrictive covenants shall be subject to review by the planning board and approval by the County Commissioners. The covenants shall include the following:

- a. Section 33 of the proposed draft be modified to preclude further subdivision to create additional lots.
- b. Measures to maintain common driveways.
- c. Measures to maintain off-site access roads.
- d. Prohibit construction of homes until all of the public

improvements are installed and approved by the County Commissioners or until contracts have been awarded for installation and an Improvement Agreement with suitable collateral is provided to the county to guarantee their completion.

- e. Any proposed change in the location of a designated building site on the final site plans shall be reviewed by the planning staff and approved by the Lake County Commissioners.
- f. Section 34 of the proposed draft be modified to include that docks are to be located in preferred locations as shown on the final site plans.
- g. Boathouses may be constructed on the lakefront lots within the lakeshore protection zone, provided that they can be adequately screened from view on the lake and across the bays. No boathouses shall be located waterward of the high water line of the lake. A valid Lakeshore Construction Permit from Lake County shall be obtained prior to any construction or removal of vegetation within the lakeshore protection zone.
- h. A natural vegetative buffer shall be maintained between the lake and 50 feet landward of the lake to provide for drainage and screening.
- I. The reservation of common property is perpetual.
- J. The covenants shall not be waived, altered, abandoned, terminated or amended in whole or in part except by review by the planning board and approval by the Lake County Commissioners.
- K. The natural area and lakefront located between the two cul-de-sacs shall be limited to pedestrian and swimming use only, and no structures shall be located on the land or out

in the lake in this area.

This approval is for 38 single family residences only, which consists of 21 lakefront lots and 17 secondary lots. Any other use(s) is prohibited unless reviewed by the planning board and approved by the Lake County Commissioners.<sup>42</sup>

The county reviews and subsequent recommendations generated numerous letters from interested parties. The DHES obtained copies of these comments and also received letters from interested persons. The addresses of all parties have been kept and will constitute the major portion of the mailing list for the draft EIS.

#### PRIMARY, SECONDARY AND CUMULATIVE IMPACTS

The primary impact from Shelter Bay Estates will be the change in land use. Presently it is in a forested, natural state. This setting is unusual from the standpoint that it is one of the few large tracts of privately owned, undisturbed shoreline left on Flathead Lake. This natural quality is highly valued by persons who live in the area. The proposed development would permanently change the natural setting of the area.

Secondary impacts would include more people, an increase in recreational use, different aesthetic qualities and changes in wildlife use of the area.

Due to the present setting, the presence of people will be noticeable. However, the nature of the development will likely attract persons similar in social, cultural and economic status to the type of people now residing along the lake in the Rollins area. Many of them will be seasonal homeowners, looking for a place to relax and enjoy the amenities of lake recreational activities.

More people will also mean an increase in recreational use of the bays. Although there will be more pressure, the nature of recreation will remain lake oriented.

Aesthetically, it would be difficult to develop the area and still retain a natural setting. The developers, however, have attempted to mitigate some of the impacts of development through the creation of protective covenants. Likewise, the Lake County Commissioners in their conditional approval listed a number of requirements for protecting the shoreline and lessening the consequences of development.

Wildlife will be affected by the changes. Those that are solitary types--such as bobcats and lynx--will likely find more isolated areas, however many will tolerate the development. Deer might not be seen in the seasons of high occupancy, but in the off-season such animals may migrate back to the area. Other animals have an ability to adapt to man's influence and, even though they may have to change their routines, will remain in the area.

Some of the cumulative impacts include possible changes in water quality and local government services.

The water quality of Flathead Lake has become an important concern. The problem of preventing further degradation centers around controlling human activity in the Flathead Lake Basin. Studies have identified a number of problem areas, including the proper disposal of sewage from residential and recreational homes. Without a properly designed sewage disposal system and plan for handling runoff water, the proposed development would pose an additional threat to further degrading Flathead Lake. However, by meeting state water quality standards and the provisions of the Sanitation in Subdivisions Act, and by incorporating protective measures, such as the lined collection ditch and installing monitoring wells, Shelter Bay Estates will not add to the sources degrading the lake.

The sale of lots and subsequent building of residences will increase the tax value of the land, however the increase in taxes, over a long period, generally doesn't pay for the increases in local government services. This situation is somewhat cushioned in the cases of recreational developments where residents are not year around residents. Although it is impossible to say what type of people will purchase lots in

the subdivision, it's reasonable to consider that many will be recreational homeowners who will only live there part of the year.

#### POTENTIAL GROWTH INDUCING OR GROWTH INHIBITING IMPACTS

Shelter Bay Estates will increase the number of people living in the Deweys and Bennetts Bays areas and taking part in recreational pursuits, however it is likely that most of these persons will be seasonal residents. The population will likely peak in the summer and dwindle to a low point sometime in mid-winter.

In another sense, the proposed subdivision may be, in a sense, growth inhibiting. Considering the development costs of such things as the sewage system, wells and road improvements, it's likely the price of the lots will be high. Certainly this will eliminate many potential buyers, and narrow the interested field to those who can not only help pay for those costs, but also build a residence once the lot is purchased. This could result in very slow development of the subdivision, particularly if such things as interest rates remain high and tax incentives for recreational homeownership are threatened.

#### IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF ENVIRONMENTAL RESOURCES

As previously discussed, land use and aesthetics will be forever changed, along with possible negative impacts to wildlife habitat.

#### ECONOMIC AND ENVIRONMENTAL BENEFITS AND COSTS

##### Benefits:

- 1) An increase in local construction jobs will occur with the development of the property.
- 2) Local commercial establishments and restaurants will benefit from trade with future residents.

- 3) The county will receive more tax revenue from the land and subsequent residents.
- 4) Some wildlife such as song birds, may benefit from the development.
- 5) Local access roads will be improved.

Costs:

- 1) The amount of taxes paid might not pay for the increased demand in local government services.
- 2) Some wildlife may not be able to adapt to the development and will move out of the area.
- 3) The aesthetic quality of the land will be permanently changed.
- 4) If historic and archaeological sites exist, and if not identified and studied, they could be forever lost.
- 5) Construction, if not closely supervised, could create erosion and sediment problems.

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

Short-Term

Costs: There will be some degradation and disruption of land during the construction of community facilities, roads and residences.

Benefits: Jobs will be created during construction.

Long-Term

Costs: There will be a change in land use and aesthetics, and a

possible change in wildlife habitat. There will also be more people and use of the area for lake recreational activities. The taxes generated from the development, may not cover all the long-term local government costs.

Benefits: Some local commercial establishments and restaurants will benefit from increased business. Additionally, access roads into the area will be improved, and last, it will provide some people with the opportunity to enjoy the amenities of living on or near Flathead Lake.

#### ALTERNATIVES

The DHES has two alternatives: 1) Deny or 2) approve the proposed subdivision in accordance with the conditions described by the DHES in the discussion of water quality and quantity.

#### RECOMMENDATION

The DHES recommends alternative #2.

#### FOOTNOTES

<sup>1</sup>Montana Department of Health and Environmental Sciences/Local Government Joint Application Form, Subdivision Application Form, Shelter Bay Estates, October 2, 1984.

<sup>2</sup>Steve Robbins, Forester, Plum Creek (Burlington Northern), Kalispell, Montana, January 8, 1985.

<sup>3</sup>Planning Section, Lake County Land Services Department, Lake County, Public Interest Statement: Cedar Island Estates, Polson, Montana, July 8, 1983, p. 5.

- <sup>4</sup>Dennis Flath, Non-Game Species Coordination, Montana Department of Fish, Wildlife and Parks, March 1, 1985.
- <sup>5</sup>Declaration of Covenants, Conditions and Restrictions of Shelter Bay Estates, Section 38. Wildlife Protection, p. 15.
- <sup>6</sup>Ibid., Section 19. Animals and Pets, p. 12.
- <sup>7</sup>H. James Cross, Wildlife Biologist, Montana Department of Fish, Wildlife and Parks, Region One, Kalispell, Montana, correspondence, June 15, 1983.
- <sup>8</sup>Scott Rumsey, Fish and Wildlife Biologist, Montana Department of Fish, Wildlife and Parks, Region One, Kalispell, Montana, correspondence, January 17, 1985.
- <sup>9</sup>Don Corrigan, Chairman, Harold Fitzner and Wilson A. Burley, Lake County Commission, Preliminary Plat Approval, Re: Cedar Island Estates Subdivision, Item 7 (f), August 16, 1983, p. 2.
- <sup>10</sup>Declaration of Covenants, op. cit., pp. 12-14 and p. 16.
- <sup>11</sup>Planning Section, op. cit., p. 6.
- <sup>12</sup>Willis M. Johns, Progress Report on Geologic Investigations In The Kootenai-Flathead Area, Northwest Montana, 6. Southeastern Flathead County and Northern Lake County, Bulletin 42, Bureau of Mines and Geology, State of Montana, Dec. 1964, p. 12.
- <sup>13</sup>Ibid., pp. 20-21.
- <sup>14</sup>Bruce J. Bauman, Review of the Engineering Design Report For The Slow Rate Spray Irrigation Land Application System At Shelter Bay Estates, February 6, 1985, p.5.
- <sup>15</sup>J.A. Sanford, J.A. Stuart and B.K. Ellis, Limnology Of Flathead Lake:

Final Report, University of Montana, Flathead Lake Biological Station, Big Fork, Montana, December 1983, pp. 79-82.

<sup>16</sup>Water Quality Bureau, Department of Health and Environmental Sciences, Strategy For Limiting Phosphorus In Flathead Lake, April 27, 1984, p. 1.

<sup>17</sup>Ibid.

<sup>18</sup>I.A. Cooper and J.W. Rezek, Alternatives For Small Wastewater Treatment Systems, U.S. Environmental Protection Agency, 625/4-77-011, October 1977.

<sup>19</sup>Dr. Steven Running, Potential Evapotranspiration For The Proposed Sewage Effluent Spray Irrigation Area For Shelter Bay Estates, correspondence with Charles S. Johnson, III, P.E., Stensatter, Druyvestein & Associates, Missoula, Montana, March 20, 1985.

<sup>20</sup>Unpublished Guidelines, DHES, Waste Water Treatment Pond Guidelines, September 1, 1981, Spray Irrigation Guidelines, July 18, 1979 and Pressure Sewer Systems, July 13, 1979 and June 25, 1981.

<sup>21</sup>Robert C. Winegar, Bedrock Structure At Shelter Bay Estates, Lake County, Montana And Its Influence On Contamination Of Groundwater, GEOPLAN, INC., March 7, 1985, p.3.

<sup>22</sup>M.K. Botz, P.E., Water Supply Analysis For Shelter Bay Estates, Hydrometrics, Helena, Montana, April 16, 1985.

<sup>23</sup>Stensatter, Druyvestein & Associates, Drainage Report For Shelter Bay Estates, Missoula, Montana, September 1984.

<sup>24</sup>Planning Section, op. cit., p.1.

<sup>25</sup>Lake County Commission, op. cit., pp.2-4.

<sup>26</sup>Declaration of Covenants, op. cit., pp.8 and 12-16.

<sup>27</sup>David Schwab, Historic Preservation Office, Montana Historical Society,

Helena, Montana, January 15, 1985.

<sup>28</sup>Dr. Carling Malouf, Department of Anthropology, University of Montana, Missoula, Montana, January 31, 1985.

<sup>29</sup>David Schwab, op. cit.

<sup>30</sup>Thain White, Dayton, Montana, January 19, 1985.

<sup>31</sup>Planning Section, op. cit., p.2.

<sup>32</sup>Ibid, pp. 2-3.

<sup>33</sup>Ibid, p. 3.

<sup>34</sup>Drew Dawson, Chief, Emergency Medical Services Bureau, DHES, April 1985.

<sup>35</sup>Planning Section, op. cit., pp.8-9.

<sup>36</sup>Lake County Commission, op. cit., pp. 1-4.

<sup>37</sup>Ibid, p.4.

<sup>38</sup>Planning Section, op. cit., p.2.

<sup>39</sup>Ibid, pp.4-5.

<sup>40</sup>Jerry Sorenson, Planning Section, Lake County Land Services Department, Lake County, Polson, Montana, April 1985.

<sup>41</sup>Planning Section, op. cit., p.7 and p.10.

<sup>42</sup>Lake County Commission, op. cit., pp.3-4.

## BIBLIOGRAPHY

- Andrews, David A., Ross, Clyde P. and Witkind, Irving J., Geologic Map of Montana, Montana Bureau of Mines and Geology, 1955.
- Bauman, Bruce J., Certified Associate Professional Soil Scientist, Review Of The Engineering Design Report For The Slow Rate Spray Irrigation Land Application System At Shelter Bay Estates, Bozeman, Montana, February 6, 1985.
- Botz, M.K., Nunnallee, D. and Willems, D.G., Final Report: Water Quality Inventory And Management Plan, Flathead River Basin, Montana, Water Quality Bureau, Environmental Sciences Division, Montana Department of Health and Environmental Sciences, August 1976.
- Botz, M.K., P.E., Water Supply Analysis For Shelter Bay Estates, Hydrometrics, Helena, April 16, 1985.
- Breuer, David W., Cole, Dale W. and Schiess, Peter, "Nitrogen Transformation and Leaching Associated With Wastewater Irrigation In Douglas Fir, Poplar, Grass and Unvegetated Systems," Utilization of Municipal Sewage Effluent And Sludge On Forest And Disturbed Land, Edited by Sopper, W.E. and Kerr, S.N., pp. 19-33.
- Breuer, David W., Cole, Dale W. and Johnson, D.W., "The Influence of Anion Mobility on Ionic Retention in Waste Water-Irrigated Soils," Journal of Environmental Quality, Volume 8, Number 2, 1979, pp. 246-250.
- Burley, Wilson A., Corrigan, Don and Fitzner, Harold, Lake County Commissioners, Correspondance, Re: Cedar Island Estates - Preliminary Approval, To: Terry Druyvestein, 1018 Burlington Ave., Missoula, Montana, August 16, 1983.
- Cole, Dale W. and Schiess, Peter, "Renovation of Wastewater by Forest Stands," Renovation of Wastewater, College of Forest Resources, University of Washington, pp. 131-147.
- Cooper, I.A. and Rezek, J.W., Alternatives For Small Wastewater Treatment Systems, U.S. Environmental Protection Agency 625/4-77-011, October 1977.
- Corrigan, Don, Burley, Wilson A. and Fitzner, Harold, Approval of Preliminary Plat: Cedar Island Estates Subdivision, Lake County Commission, Polson, Montana, August 16, 1983.
- Crites, Ronald W., Meyer, E.L., Smith, R.G., Land Treatment of Municipal Wastewater, U.S. Environmental Protection Agency, 625/1-81-013, October 1981.
- Cross, H. James, Wildlife Biologist, Region One, Montana Department of Fish, Wildlife and Parks, Cedar Island Estates Subdivision, Kalispell, Montana, June 15, 1983.
- Forestry Division, Montana Department of State Lands and Intermountain Forest and Range Experiment Station, Region 1, U.S. Forest Service, Timber Resources of Lincoln, Sanders, Flathead and Lake Counties, December 1982.

- Great Lakes-Upper Mississippi River Board of State Sanitary Engineers, Recommended Standards For Sewage Works, Health Education Service, Inc., 1978 Edition.
- Great Lakes-Upper Mississippi River Board of State Sanitary Engineers, Recommended Standards For Water Works, Health Education Service, Inc., 1976 Edition.
- Green, Jack L. and Staninger, Ken A., Declaration of Covenants, Conditions and Restrictions of Shelter Bay Estates, Missoula, Montana, 1984.
- Johns, Willis M., Progress Report On Geologic Investigations In The Kootenai-Flathead Area, Northwest Montana, 6. Southeastern Flathead County and Northern Lake County, Bulletin 42, Bureau of Mines and Geology, State of Montana, December 1964.
- Jourdonnais, Jon H. and Stanford, Jack A., Verification of Shoreline Sewage Leachates In Flathead Lake, Montana, Open File Report, University of Montana, Flathead Lake Biological Station, Bigfork, Montana, February 27, 1985.
- Lake County Land Services Department, Lake County, Public Interest Statement: Cedar Island Estates, Polson, Montana, July 8, 1983.
- Malouf, Carling, PhD, Anthropology and Sociology Papers, Department of Sociology and Anthropology, University of Montana, Missoula, Montana.
- Malouf, Carling, PhD, Archaeological And Anthropological Sites In The Rollins Area, Department of Anthropology, University of Montana, Missoula, Montana, January 31, 1985.
- Montgomery, James M., Flathead Drainage 208 Project: Population/Economic Forecasts, James M. Montgomery, Consulting Engineers, Inc. and Morrison-Maierle, Inc., Helena, Montana, September 1976.
- Rumsey, Scott, Fish and Wildlife Biologist, Region One, Montana Department of Fish, Wildlife and Parks, Shelter Bay Estates Subdivision, Kalispell, Montana, January 17, 1985.
- Running, Steven W., PhD, Potential Evapotranspiration For The Proposed Sewage Effluent Spray Irrigation Area For Shelter Bay Estates, correspondence with Charles S. Johnson, III, P.E., Stensatter, Druyvestein & Associates, Missoula, Montana, March 20, 1985.
- Schwab, David, Archaeologist/Anthropologist, Historic Preservation Office, Montana Historical Society, Subdivision On West Shore Of Flathead Lake, East Of Rollins, Montana, T25N, R20W, Section 21, Helena, Montana, January 15, 1985.
- Shelter Bay Estates, Bylaws of Shelter Bay Estates Landowners Association, Inc., 1984.
- Shelter Bay Estates, Montana Department of Health and Environmental Sciences/Local Government Joint Application Form, 1984.

Soil Conservation Service, United States Department of Agriculture, Soil Survey, Upper Flathead Valley Area Montana, Series 1946, No.4, September 1960.

Stanford, J.A., Stuart, J.A. and Ellis, B.K., Limnology Of Flathead Lake: Final Report, University of Montana, Flathead Lake Biological Station, Bigfork, Montana, December 1983.

Stensatter, Druyvestein & Associates, Drainage Report For Shelter Bay Estates, Missoula, Montana, September 1984.

Stensatter, Druyvestein & Associates, Engineering Design Report For The Water And Sewer Systems At Shelter Bay Estates, Lake County, Montana, Missoula, Montana, April 1984.

Stensatter, Druyvestein & Associates, Project Manual For Road Construction And Installation Of Water And Sewer Systems At Shelter Bay Estates, Lake County, Montana, Missoula, Montana, May 1984, Revised: September 1984.

Stensatter, Druyvestein & Associates, Shelter Bay Estates Engineering Design Report For Land Application System, Missoula, Montana, Revised March 1985.

Stensatter, Druyvestein & Associates, Technical Specifications For Water And Sewer System Improvements At Shelter Bay Estates, Lake County, Montana, Missoula, Montana, April 1984.

United Oil Products Inc., Johnson Division, Ground Water and Wells, seventh printing 1982, St. Paul, MN 55165.

Unpublished Guidelines, Department of Health and Environmental Sciences, Wastewater Treatment Pond Guidelines, September 1, 1981, Spray Irrigation Guidelines, July 18, 1979 and Pressure Sewer Systems, July 13, 1979 and June 25, 1981.

Water Quality Bureau, Department of Health and Environmental Sciences, Strategy For Limiting Phosphorus In Flathead Lake, April 27, 1984.

White, Thain, Archaeological and Anthropological Sites In The Deweys Bay Area, Dayton, Montana, January 19, 1985.

Winegar, Robert C., Bedrock Structure At Shelter Bay Estates, Lake County, Montana And Its Influence On Contamination Of Groundwater, GEOPLAN INC., March 7, 1985.

#### CONTRIBUTORS

Jim McCauley, B.A., M.S., Engineering  
Jim Melstad, B.S., M.S., Engineering  
Tom Ellerhoff, B.S., Science Journalism