Chapter 3 – Affected Environment, Environmental Impacts, Mitigating Measures

3.1 EARTH

A detailed examination of the “Earth” characteristics for the marina expansion and the Ludlow Bay Village areas can be found in the 2002 Port Ludlow Marina Expansion SEIS, the 1993 EIS for the Port Ludlow Development Program, and the 1993 EIS for the Inn at Port Ludlow. A more general discussion of the “Earth” characteristics for the RC/CF zone follows.

3.1.1 Affected Environment

Topography
The Resort area consists of terrestrial uplands and submerged lands in, and immediately north of the inner portion of Port Ludlow Bay. Topography in the southern portion of the Resort area was modified by progressive filling from the shipbuilding, logging, and sawmill activities that occupied the site beginning in the late 1800s. Existing site topography is shown in Figure 6.

The uplands consist generally of a gently upward, south-east facing slope, ranging from 0 elevation at sea level and the shoreline near the marina, to an elevation of approximately 90 feet at the northwestern boundary of the Resort. The upland topography can be broken into three distinct areas; the flat lowland adjacent to the marina shoreline, which includes old fill; the gently sloping upland plateau; and bands of steep slopes lying between the lowlands and uplands. The bands of steep slopes (40+ percent) generally lie along the east side of Oak Bay Road, south of Marina View Drive; one band of slopes also extends easterly and separates existing parking and lagoon areas from property fronting Harbor Drive.

The beach slope above the existing Port Ludlow Marina consists of quarry spall and small riprap. Further west, the beach steepens, and the 15- to 40-foot bank is covered with vegetation. Property owners in this area have experienced problems with sloughing and erosion.

Within the marina, subsurface elevations range from –0 feet (MLLW) to –38 feet under the outermost docks. Underwater slopes adjacent to the beach average 9 to 11 percent. Further waterward, the bottom flattens with slopes ranging from 2 to 4 percent.

Port Ludlow Bay is a 2.2 square mile, J-shaped tidal basin, which extends from the mouth of Ludlow Creek 3.5 miles to Admiralty Inlet.

The eastern approach to the bay is characterized by a submerged sill, which forms a submerged basin open to the north. The average depth at the mouth of the bay is 78 feet (MLLW). From this point, the bottom of the basin slopes upward for a distance of 0.5 mile to a depth of 48 to 54 feet. From here, the depth of the bay remains fairly uniform throughout most of its length to within 0.5 mile of Ludlow Creek. The innermost 0.5 mile of the bay has a maximum depth of 40 to 42 feet.
Soils
Upland Soils
The flat, lowland area above the marina contains fill material from the original lumber processing and shipping uses. On-site soil investigations in this area were completed by Shannon & Wilson in 1988, and by Landau Associates in 1991. These investigations found the lowland area to be characterized by near-surface heterogeneous fill material, ranging from imported native material to construction/demolition debris. Densities range from loose to very dense, and portions of the area are very permeable. One isolated pocket of soil to the north of the pond was found to contain trace levels of semi-volatile organic compounds. This soil was removed in conjunction with expansion of the artificial lagoon in 1994.

Soils within the Admiralty area have been mapped as Swantown gravelly sandy loam, 0 to 8 percent slope (SuB) and Indianola loamy sand (InC).

Marine Sediments
Landau Associates conducted subsurface explorations in the marina in 2001. Based on the conditions encountered in seven borings, the area of the proposed marina expansion is generally underlain by an upper unit of very soft, recent marine sediment over a lower unit of medium dense/stiff, older marine sediment. Underlying the marine sediment is an upper unit of medium stiff glacial deposits and a lower unit of dense/hard glacial deposits. These subsurface conditions preclude the shallow anchoring of new floats.

Sediment sampling was conducted in 1987, 1991, 1993, 1995, 1997, and 1999. Metals tested for include: arsenic, cadmium, chromium, copper, iron, lead, mercury, nickel and zinc. Samples in 1995 were also analyzed for the content of organic carbon, fats/oil/grease (FOG) and pH. Results of the sediment quality monitoring demonstrate that sediments in Port Ludlow Bay contain low concentrations of heavy metals. The 1999 Report concluded “...sediment quality is comparable to other non-urban Puget Sound bays, metal concentrations are generally much lower than in urban bays of Puget Sound, and sediment quality is not declining.”

Geologic Hazards
The 1998 Jefferson County Comprehensive Plan includes maps depicting designated Critical Areas. The Resort at Ludlow Bay is not shown as encompassing areas of Erosion Hazard. That portion of the Resort along the shoreline adjacent to the marina is shown as “Landslide Hazard – Low Risk”, and the shoreline adjacent to the Admiralty I and II areas is shown as “Landslide Hazard – Medium Risk.” The flat, lowland area above the marina (i.e., area of fill) is shown as an area of potential seismic hazard.

3.1.2 Environmental Impacts

Short-Term Construction Impacts
Temporary, short-term impacts will result from construction activities. For all alternatives, grading will be required for construction of building pads, reconfiguration of parking areas, and, in the Admiralty III area, installation of utility improvements. For the marina expansion, construction work will also occur in and over water.
The upland erosion potential for this construction site is less than that for a typical construction project because the construction activity will be spread-out in various “pockets” throughout the larger development, thus reducing the potential for large amounts of erosion or erosion runoff. Also, many of the areas being proposed for construction have already been cleared of their existing vegetation through previous grading activities. This previous work will reduce the current clearing and grading time and thus reduce erosion potential. Because of many unforeseen circumstances such as a large unexpected rain event during construction or a longer than expected construction schedule, erosion control measures will nonetheless be implemented.

No upland earthwork will extend below Ordinary High Water (OHW).

Construction activities associated with installation of new piles in Port Ludlow Bay will result in a temporary increase in localized turbidity. A more detailed discussion of turbidity is included in the 2002 Port Ludlow Marina Expansion SEIS. No dredging will be required for the marina expansion in any Alternative.

Because of the quality of the existing sediments in Port Ludlow Bay, re-suspension and movement of contaminated sediments is not considered a significant impact.

**Long-Term Impacts**

**Alternative 1: Preferred Project – 2003 Resort Plan**

Alternative 1 would require earthwork to reconfigure parking areas, construct new buildings, and install new infrastructure in the Admiralty III area. No major alterations to site topography are proposed. Except as noted below, existing steep slopes would remain undisturbed.

Proposed grading in the Ludlow Bay Village area will be relatively minor relative to the development proposed. Parking lots will be placed close to existing grade, with a maximum cross slope of 5 percent. Grading for the parking lots will require construction of one concrete wall, a maximum of 18 feet in height, in the area of steep slopes north of the relocated Harbor Master Restaurant. Grading for the residential buildings will also be fairly minor since many of the buildings will be placed on pile foundations near the lagoon instead of a typical flat pad that would require extensive fill. Residential units located on slopes will be built to accommodate the slope by use of multi-stories with upper and lower entry-level parking.

It is anticipated that total grading activities will result in comparable amounts of cut and fill and therefore, import and/or export of material will be minimal. Sectional views of proposed grading within Ludlow Bay Village are shown in Figures 7A through 7C.

Grading activities within the Admiralty III area will not be significant given the existing topography.

Site soils are suitable for the proposed construction. Development within the Ludlow Bay Village area will require ground improvement techniques to limit foundation settlement. To date, the townhome structures built within this area (except those structures on the bluff above the lagoon) have been constructed on piling. Each building site is evaluated on a case-by-case basis by a geotechnical engineer to determine the requirements for foundation stability. From
the past building activity and soil testing, it is assumed the new restaurant and recreation buildings will be supported by steel or auger-cast concrete piling. Over-excavation of material has not been used to date, and it is not anticipated that it would be used in the future. With the use of piling, grading activity in these areas will be minimized.

The Port Ludlow Marina Expansion SEIS (2002) concluded that expansion of the marina will not affect geologic conditions in that area. Minor maintenance dredging may be required at the northwest corner of the existing C-dock at some point in the future, but the timing is unknown. Expansion of the marina to the west will increase boat activity in the vicinity of properties that have experienced previous problems with erosion. It is unclear whether past erosion problems were the result of boat wakes, storms, and/or upland runoff. The western docks will reduce wave impact on the shoreline behind the floats.

A more detailed discussion of impacts associated with the marina expansion is contained in the Port Ludlow Marina Expansion SEIS (2002).

Alternative 2: 1993 Resort Plan
Impacts of Alternative 2 on site topography and soils are similar to Alternative 1. Within Ludlow Bay Village, more grading would be required within the steep slopes at the southwest corner of the Resort (below Harbor Drive) to provide for the new residential development in that area. No grading would be required, however, for reconfiguration of the upper parking lot south of Harbor Drive.

Alternative 3: No Action – Existing 1999 Resort Plan
Impacts to site topography and soils resulting from construction of Alternative 3 would be more significant than with Alternatives 1 or 2, as the site would be more intensely developed. Construction of Alternative 3 would require significant grading of existing slopes along the eastern side of Oak Bay Road from the shoreline north to Marina View Drive in order to construct the proposed parking and recreation facilities. In addition, the eastern one-half of the existing artificial lagoon would be filled to provide required open space. It is also assumed that the proposed amphitheater would not be constructed but that a conference center would be constructed.

The original 1999 Plan envisioned the southern portion of the Admiralty III area as open space, in response to the more intense facility development within Ludlow Bay Village. If the area were to remain as open space, no grading would occur. It is unclear, however, what would happen to this area at this point in time given the less intense development in Ludlow Bay Village.

Construction of large, heavy structures such as a parking garage (southwest corner of Resort) on areas of existing fill would require extensive ground improvement techniques.

Impacts from the marina expansion would be the same as the impacts identified in Alternative 1.
3.1.3 Mitigating Measures

Proposed (Alternative 1):

Short-Term, Construction Impacts - The following erosion control measures are proposed:

- Silt Fences – Silt fences will be placed around graded areas where vegetation has not yet been established to prevent construction runoff from spreading sediment to adjacent properties or Ludlow Bay.
- Mulching and Hydroseed – Mulch and/or Hydroseed will be placed on areas that have been disturbed by grading and construction activity. Once placed and established, grass and mulch help to prevent runoff containing high concentrations of sediment.
- Plastic Covering – Plastic covering will be used to cover stockpiles of soil on site, and plastic may be used to temporarily cover slopes to prevent erosion before the establishment of hydroseed or mulch.
- Interceptor Ditches w/Check Dams – Interceptor ditches will be used to direct stormwater in the construction areas to temporary sediment traps and/or ponds. Check dams help to reduce flow velocities and thus reduce the suspension of sediment in the stormwater. Interceptor ditches may also be used to prevent stormwater from areas not under construction from entering the construction area.
- Dust Control – Dust control management includes providing water trucks on site to spray exposed areas during dry times where wind-blown dust is possible. Gravel construction entrances and mulch also will help to prevent excessive dust.
- Sediment control facilities – Sediment ponds and sediment traps will be used to collect, treat, and discharge stormwater runoff during construction. These facilities function as small water quality facilities by allowing residence time for sediment to fall to the bottom of the trap and discharging clean water from the top as water rises.

From the Port Ludlow Marina Expansion Final SEIS (2002):
- In-water construction activities will be limited to the period between July 16 and February 16 in order to minimize potential impacts to juvenile Puget Sound chinook salmon, Hood Canal summer-run chum salmon, and bull trout.
- Best Management Practices will be employed during construction including silt fences, spill control measures, floating booms, etc.

Long–Term Impacts
- Work in steep slopes will be minimized to the extent possible.
- New development will be designed to follow the existing topography to the extent feasible.
- Site-specific geotechnical explorations will continue to be undertaken for each building pad to determine construction recommendations.

3.1.4 Unavoidable Adverse Impacts

No significant unavoidable adverse impacts to site soils or site topography are anticipated.
3.2 WATER

3.2.1 Surface Water
The following information regarding surface water has been taken from the Port Ludlow Development Program Draft EIS (1992), the Draft EIS for the Inn at Port Ludlow (1992), the Port Ludlow Non-Point Monitoring Program 2002 Report (2003), the Draft Report – Landscaping Plan, Port Ludlow Resort Expansion (2004), and information provided by ESM, Inc.

3.2.1.1 Affected Environment
Water Bodies
No wetlands or streams are located within the Resort. A 2+-acre artificial lagoon is located within Ludlow Bay Village above the marina. The Resort complex is surrounded by Port Ludlow Bay on the south and east.

The existing artificial, man-made lagoon was first created in 1967 and then expanded to its current size in 1994. The lagoon is situated on part of the old mill site. The lagoon is approximately 10 feet deep; a floating walkway connects the north and south shore via a small island. Because the soils between the lagoon and Bay are porous, water seeps out from the lagoon and pumps are used continuously to bring in saltwater via three short waterfalls. Salinity of the lagoon water is expected to be similar to the salinity of the Bay (approximately 30 parts per thousand), although the presence of freshwater from rainfall, stormwater runoff, and any groundwater seepage, causes this level to fluctuate.

The artificial lagoon provides water quality treatment by providing residence time for stormwater runoff prior to discharge into the Bay. The residence time allows time for suspended solids to settle to the bottom of the lagoon, and improves the quality of water being discharged. Other water quality parameters in the pond (i.e., dissolved oxygen, nutrients, and temperature) have been reported to vary widely, which is common in small, shallow ponds.

Port Ludlow Bay is a 2.2-square mile, J-shaped tidal basin, which extends from the mouth of Ludlow creek 3.5 miles to Admiralty Inlet. The location, geometry, and orientation of Port Ludlow Bay is such that the strong offshore ebb-and-flood tidal currents in Admiralty Inlet create a large eddy in the outer portion of Port Ludlow Bay that appears to reverse direction with each tidal stage. Waters from Admiralty Inlet are drawn into the Bay under a wide variety of tidal conditions. Current measurements, drogue observations, and salt balance calculations made in 1984 and 1986 indicated that the outer bay eddy is accompanied by a complex pattern of currents that exert influence into the central portion of the Bay. Significantly more water is circulated into and out of the Bay due to eddies and currents than would be the case if only a simple ebb-and-flood pattern existed. As a consequence, the Bay may be better mixed and better flushed than many bays within Puget Sound. Mixing is further enhanced by vertical currents and upwelling at the entrance and head of Port Ludlow Bay (Jefferson County 1993).

The Bay is flushed by tidal currents, fresh water from streams and rainfall, wind-mixing of the surface water, and local vertical mixing. Salt balance calculations indicated that the volume of...
Water exchanged daily between Port Ludlow and Admiralty Inlet averages 39 percent per day and varies from 20 to 50 percent of the total volume of the Bay, dependent on the time of year and prevailing tidal range. The time to exchange the water volume of the Bay, including the innermost reaches, was estimated to be between 2 to 5 days. Localized portions of the Bay may have longer or shorter flushing rates. The flushing time for the outer bay has been estimated to be 9 hours on average (Jefferson County 1993).

Drainage
The Port Ludlow Resort complex is divided into five drainage subbasins, as shown in Figure 8. Storm drainage systems have been constructed in Basins EX-1, EX-2 and EX-3 to accommodate the Resort development to date. Runoff within Basin EX-1 is collected and conveyed to a ravine that outlets to the Bay in the vicinity of the treatment plant. Runoff within Basin EX-2 is also collected and conveyed (via catch basins and pipes) to outlets to the Bay. Runoff within Basin EX-3 is collected and conveyed to inlets on the east and west ends of the artificial lagoon. From the lagoon, water is discharged directly into Port Ludlow Bay. Rooftop drainage within EX-3 is connected (via downspouts) to this drainage system.

Water Quality
The Washington State Department of Ecology has classified all waters of Port Ludlow as Class AA. Water Quality monitoring of Port Ludlow Bay from 1984 through 1998 has demonstrated that overall water quality in Port Ludlow Bay is excellent, consistent with its Class AA designation (Jefferson County 1993).

A program to monitor non-point sources of pollutants to Port Ludlow Bay was initiated in 1989 to comply with conditions imposed by Jefferson County. Annual monitoring reports have been prepared since 1990; the study design varies from year to year to focus on priority issues. In combination, these reports have identified the chemical composition of stormflow and baseflow from each tributary to Port Ludlow Bay, characterized stormflow quality from various development areas, and established baseline sediment quality.

Potential non-point sources of pollution within the general area include septic tanks, roads and parking lots, residential runoff, agricultural chemicals and waste, forestry runoff, golf course drainage, marinas and boats, internal loading from sediments, atmospheric fallout, and exchange of water with Admiralty Inlet. Inputs of water from Admiralty Inlet average 3,000 mgd and dominate over the influences of all freshwater sources.1

No long-term upward or downward trends in constituent concentrations are evident for any of the monitoring stations. Constituent concentrations, for the most part, have not been increasing along with the increased population density of the watershed. Concentrations of most constituents (e.g., fecal coliform) have been higher during storm events than during baseflows, which is consistent with the findings of other watershed studies (Berryman & Henigar 1999).

1 Port Ludlow Non-Point Monitoring Program, 2002 Report
A point-source monitoring program for the Port Ludlow Wastewater Treatment Plant was also conducted from 1989 through 1997 but was discontinued in 1998 due to the excellent performance record of the treatment plant.

**Marina - Gray and Black Water Discharge**

The *Port Ludlow Marina Expansion SEIS* (2002) addressed gray and black water discharge as follows. The potential for the discharge of gray (galley, bath, and shower water) and black water (sewage containing human body wastes and the waste from toilet and other receptacles intended to receive or retain body waste) exists within all marinas. Discharge of black water is illegal and prohibited within the Port Ludlow Marina. Discharge of gray water is allowed under specific conditions, consistent with State requirements. Please refer to the *Port Ludlow Marina Draft Supplemental Environmental Impact Statement* (2002) for a more detailed discussion of the Marina’s policies for controlling discharge of sewage and gray water within the marina.

Of particular concern is the discharge of sewage. The Washington State Department of Ecology (Ecology) has established water quality standards for fecal coliform bacteria (Chapter 173-201 WAC). For Class AA marine waters, including Port Ludlow Bay, the fecal coliform standard is a geometric mean of 14 organisms per 100 milliliters (mL) of water. This standard applies to waters where edible shellfish are present. The U.S. EPA has established water quality criteria for fecal coliform and enterococcus bacteria based on health risk to swimmers at both freshwater and saltwater beaches. These criteria are geometric means of 200 and 35 organisms/100 mL, respectively.

Current Port Ludlow Marina regulations require that all live-aboard tenant vessels must be equipped with a Coast Guard-approved holding tank and that live-aboard tenants submit to inspection of their vessels plumbing and mechanical systems to verify compliance with state and local public health and safety laws. The Marina now provides one sewage pump-out station at the fuel dock and will soon be putting into service a portable pump-out facility. Shoreside restroom facilities are also available for marina patrons. As stated above, water quality monitoring data for Port Ludlow Bay indicates no long-term upward or downward trends in constituent concentrations for any of the monitoring stations.

**Bilge Water**

The *Port Ludlow Marina Expansion SEIS* (2002) addressed the discharge of bilge water as a potential source of pollution in marinas, as bilge water may contain a variety of chemical constituents, but predominantly petroleum hydrocarbons. Port Ludlow Marina’s Best Management Practices (BMPs) expressly forbid the discharge of bilge water within the marina.

3.2.1.2 Environmental Impacts

**Short-Term Construction Impacts**

**Upland Development.** The potential for runoff from erosion and sedimentation during construction activities is addressed in Section 3.1.2 - Earth.

**Marina Expansion.** The *Port Ludlow Marina Expansion SEIS* (2002) addressed water quality impacts. The SEIS determined that during construction, potential discharges to surface water include leakage of petroleum products from construction equipment. These substances can enter marine water directly or in stormwater runoff.
Few, if any, juvenile salmonids are expected in the action area during construction activities; also, few adult chinook salmon or bull trout are expected in the project area during construction. Short-term and localized decreases in dissolved oxygen or increases in turbidity due to project construction may result in avoidance of immediate work areas. Should this avoidance occur, it would have only insignificant and unmeasurable effects on salmonids.

Temporary and localized impacts to water quality may also occur due to pile driving. However, given the depth of the water where the pilings will be installed, it is highly unlikely that any increased turbidity due to pile driving will affect areas frequented by juvenile salmonids.

**Long-Term Impacts**

**Alternative 1: Preferred Project – 2003 Resort Plan**

Build-out of the Resort will increase stormwater runoff in Basins A, B, and EX-3. New development in Basins A and B will require construction of a storm drainage system (including detention and water quality treatment) consistent with the requirements of Jefferson County/Port Ludlow Development Agreement. After detention and water quality treatment, runoff from Basins A and B will pass through the existing conveyance system to the artificial lagoon.

New development within Basin EX-3 will be located within the Ludlow Bay Village area, where an existing storm drainage system is in place. New impervious surfaces in this area will consist only of rooftops. The existing drainage system has the capacity to accommodate the increased runoff. Water quality treatment is not required for rooftop drainage.

In order to supplement water quality treatment within the Ludlow Bay Village area, Alternative 1 will include adding a water quality vault at each of the two inlets to the artificial lagoon.

The *Port Ludlow Marina Expansion SEIS* (2002) concluded that no long-term direct or indirect effects to water quality are anticipated as a result of the marina expansion. Although the marina expansion will result in increased boat activity, this activity is not expected to significantly degrade water quality or impact any populations of shellfish that may be present in the vicinity of the project area.

Alternative 1 does not include any filling or dredging within any body of water.

**Alternative 2: 1993 Resort Plan**

The impacts of Alternative 2 on surface water would be similar to Alternative 1.

**Alternative 3: No Action – 1999 Resort Plan**

The impacts of Alternative 3 on surface water would be similar to Alternatives 1 and 2, except that the western half of the existing artificial lagoon would be filled. In addition, the more intense use of the site would result in increased impervious surfaces, increased vehicular traffic, and an increased need for water quality treatment for road and parking lot drainage.
3.2.1.3 Mitigating Measures

Proposed (Alternative 1):
- Erosion and sedimentation control plans would be implemented as described in Section 3.1.3.
- The existing storm drainage conveyance system will be evaluated to determine if sufficient capacity exists to accommodate runoff from Basins A and B (post-development).
- New water quality vaults will be installed at the east and west ends of the artificial lagoon.
- In conjunction with the Resort’s plans for application of fertilizers and pesticides, the stormwater collection and treatment system is expected to protect water quality over the long term.
- The Non-Point Water Quality Monitoring Program will be continued.

From the *Port Ludlow Marina Expansion SEIS* (2002):
- At the Marina, a hazardous material spill clean-up kit will be available on the fuel float and on one of the expanded docks, and crews will be trained in the use of this kit.
- The Port Ludlow Marina will continue to educate users of the marina regarding BMPs.
- Port Ludlow Associates will educate Marina users regarding the effects of discharging gray water and will strongly discourage such discharge.
- Port Ludlow Associates is committed to ongoing enforcement of BMPs at the Marina; the BMPs will be enforced via fines and/or revocation of marina use.
- Two portable boat sewage pump-outs will be installed at the Marina, providing further ability to pump out sewage from vessels.

3.2.1.4 Unavoidable Adverse Impacts

No significant adverse impacts to surface waters are anticipated.

3.2.2 Groundwater

3.2.2.1 Affected Environment

Four principal aquifers have been identified in the general vicinity of the Resort at Port Ludlow. These aquifers are shown in Figure 9 and are known as the:

- Well 1 Aquifer
- North Aquifer
- South Aquifer, and
- South Valley Aquifer

Olympic Water and Sewer Inc., which serves the Port Ludlow MPR, currently draws groundwater from three wells in the North Aquifer (Wells 2, 3, and 4N) and two wells in the
Principal Port Ludlow Area Aquifers

Data Sources: Interstates, state routes, and roads from TIGER 2000. County boundaries, cities, and waterbodies from Department of Ecology Aquifer and well locations from Draft EIS for Port Ludlow Development Program (Oct. 26, 1992).

All locations are approximate.
Lambert Conformal Conic
Washington State Plane North
North American Datum 1983

Explanation
- Approximate Aquifer Boundary
- Well Locations

Note: This drawing is for informational purposes. It is intended to assist in showing features discussed in an attached document.

It is unlawful to copy or reproduce all or any part thereof, whether for personal use or resale, without permission.
South Aquifer (Wells 13 and 14). No groundwater is currently withdrawn from the Well 1 Aquifer or the South Valley Aquifer.

Existing information on each aquifer, summarized below, is taken from the Draft EIS for the Port Ludlow Development Program (1992), the Draft EIS for the Inn at Port Ludlow (1992), and the Olympic Water and Sewer Inc.’s annual Monitoring Report dated February 2003. The annual Monitoring Program, required by Jefferson County, concentrates on the North and South Aquifers and encompasses the area presumed to overlie these aquifers, as well as a substantial area around each aquifer. The current groundwater monitoring network is comprised of 17 wells owned and maintained by eight separate participants. The goal of the program is to assess the long-term condition of the aquifers in the Port Ludlow area. To date, the monitoring program has found “no definitive indications of declining water levels related to groundwater production or rising chloride and conductivity levels in any of the three aquifers monitored in the Port Ludlow area”.

The Well 1 Aquifer lies partially beneath the Resort. The Well 1 Aquifer has one well (Well 1) that is completed at a depth of 361 feet (approximately 250 feet below sea level). Well 1 is currently unused and has a production capacity of approximately 50 gallons per minute (gpm).

The North Aquifer is encountered about a half-mile northwest of the Resort and contains three wells (Wells 2, 3, and 4N) currently used by the Olympic Water and Sewer Company to serve the Port Ludlow MPR and other users. The recharge area is estimated to be 1 square mile and total annual recharge to the aquifer has been calculated as 370 gpm (597 acre-feet per year [af/yr]).

Historic water level production and precipitation data were examined in the early 1990s to determine production rates that would not result in water level declines of the North Aquifer. Production from the North Aquifer had reached 87.3 gpm (141 af) in 1992. Robinson and Noble estimated that, at a pumping rate of 70 gpm (113 af/yr), water levels would remain steady with average rainfall. Therefore, an average withdrawal from this aquifer of 65 gpm (105 af/yr) was recommended. The average withdrawal rate has been approximately 70 gpm (113 af/yr) between 1993 and 2002 and was 78 gpm (126 af) in 2002. Water levels in the North Aquifer have shown a general rise since the programmed decrease in withdrawal rates from the aquifer was initiated in 1993. The groundwater monitoring program is continuing.

The South Aquifer lies across Port Ludlow Bay, at and south of Tala Point, and includes two wells (Wells 13 and 14) operated by the Olympic Water and Sewer Inc. The recharge area is approximately 4.5 square miles and total recharge is approximately 1,640 gpm (2,640 af/yr). The combined withdrawal rate from Wells 13 and 14 in 2002 was 109.2 gpm (176 af), while a hypothetical yield of 492 gpm (794 af/yr) was determined for the aquifer based on conservative assumptions for precipitation, evaporation, and runoff. The South Aquifer also contains four other major wells – the PUD Bywater wells 1 and 2, the Paradise Bay well, and the Tala Point Partners well.

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The South Valley Aquifer is located across Port Ludlow Bay, about 2 miles south of the Resort. Numerous test wells have been drilled in this aquifer but none are currently in use. This aquifer has two inactive sources – Wells 4A and 9, which are being considered for treatment and return to service. A hydrological study concluded that this aquifer is unable to support long-term, year-round groundwater production but could augment supplies during peak demand periods by up to 65 gpm.

Other wells exist in the vicinity of Port Ludlow. In the upland areas, most are private wells tending to draw from water-bearing zones that are above sea level, such as the North Aquifer. Along the shoreline, private wells are generally completed below sea level in water-bearing zones such as the South Aquifer. A monitoring network that includes 17 wells operated by Olympic Water and Sewer, other purveyors, and private residences was established in 1993 to monitor for indications of salt-water intrusion. To date, the water characteristics have remained stable, with no indications of salt-water intrusion.

The depth of shallow groundwater at the Resort site varies with season, rainfall and tidal influence. In areas of fill, groundwater is encountered at approximately 8 feet below ground surface. In portions of the upland areas, water depth may be as shallow as 3 feet.

The groundwater quality within the North and South Aquifers is typical of groundwater in the Puget Sound region. The relatively low concentrations of chloride, a parameter used as an indicator of salt-water intrusion, have remained stable in all of the monitoring network wells.

**3.2.2 Environmental Impacts**

**Alternatives 1, 2, and 3**

Water supplies to meet the additional demands from Resort build-out will be provided by Olympic Water and Sewer Inc. They will continue to rely on the North and South aquifers but may also draw from the South Valley Aquifer to augment supplies during periods of peak demand. The increased demand on the water supply from the planned Resort development and marina expansion is estimated to be approximately 23 gpm (37 af/yr). This represents a demand increase of approximately 12.2 percent over the 2002 production of 187.2 gpm (302.3 af). The water company, with its water rights holdings of 465 af/yr, has concluded from previous studies that these aquifer systems have sufficient capacity to support Alternatives 1 or 2. Alternative 3 has not been studied.

The withdrawal of groundwater to serve the expanded Resort and marina is not expected to have any impact on water quality. Approximately 10 years of monitoring data have demonstrated that saltwater intrusion has not occurred under current rates of withdrawal. Based on the current understanding of aquifer dynamics systems, there is currently no basis for believing that the approximately 12 percent increase in withdrawal rate will change this situation. Since annual groundwater monitoring will continue, any saltwater intrusion problems will be identified and corrected (such as through altering pumping rates from the various supply wells available) before they affect water supplies.
The proposed project does not involve discharge of surface waters to groundwater. Any accidental releases of sediments, petroleum products, or other contaminants during construction would either run off and be collected in the stormwater distribution and treatment system, or would be retained in surface soils. Neither construction nor operation present any risks to the Well 1 Aquifer beneath the Resort site nor to any other aquifers in the area (none of which are downgradient from the site).

3.2.2.3 Mitigating Measures

Proposed:
- The continuing groundwater monitoring program provides adequate coverage and information regarding water levels and water quality and allows long-term trend analysis of the Port Ludlow area aquifers.

3.2.2.4 Unavoidable Adverse Impacts

The region’s aquifers will continue to be managed to sustain long-term supplies of water for the expanded Port Ludlow Resort and Marina and other area users. Withdrawals are not likely to significantly draw down or reduce the production capacity of the aquifers. However, as with any project, use of additional water for this project will preclude that water from being available for other future uses in the area.
3.3 PLANTS AND ANIMALS

3.3.1 Affected Environment

Regional Conditions

In 1992, Raedeke Associates conducted a survey of plant and animal communities in the Port Ludlow Development Program area (Raedeke Associates, 1992a). The purpose of that survey was to obtain baseline information on an approximate 1,200-acre area and to assess impacts of future development. Since that study area encompasses and generally surrounds the portion of the Port Ludlow Resort development addressed in this SEIS, it serves as the primary source of recent information on plants and animals in the general vicinity of the resort site. The information regarding regional conditions is contained in Appendix B of this document and is summarized from that report unless indicated otherwise.

Resort Site

In 1992, Raedeke Associates conducted a plant and animal survey of a 17.5-acre study area including the artificial lagoon and areas immediately to the east, west, and north of the lagoon (Raedeke Associates, 1992b). That report, an appendix to the 1992 Inn at Port Ludlow DEIS (Jefferson County, 1992b), contains species lists and scientific names of the plants and animals named below. This section combines the Raedeke information with more recent data on site-specific conditions, including a biological site reconnaissance on November 4, 2003.

Upland Areas

The upland portions of the Resort site have been disturbed previously and do not appear to support any significant concentrations of native habitats or species. Much of the site is presently covered by roads and driveways, parking lots, residences, recreational facilities, and other structures, all of which are surrounded by lawns or ornamental landscaping. On the west and north sides immediately beyond the Resort boundaries, vegetation is relatively dense and undisturbed (except areas surrounding scattered residences).

Even though the Resort occurs in an area of fairly steep terrain, most of the site has been contoured and a stormwater drainage system has been installed. Even the few remaining open, undeveloped portions have been graded flat and planted with lawn grass. The northern portion of the site tends to drain to the east (toward the Bay) while the southern portion drains to the south (toward the lagoon).

Noise and human activity levels at the Resort can vary widely depending on the season. During the November 4, 2003 site visit, noise and activity levels were fairly low. Some noise from construction within the resort and traffic on the adjacent highway was discernable.

Animal populations and assemblages most common on the site are birds and small mammals that are tolerant of human activity (such as moles, shrews, mice, rats, squirrels, and rabbits).
Artificial Lagoon
The lagoon is a man-made facility, initially constructed in 1967 by excavating upland soils in the area of the old mill site. It was 1.4 acres in size. In 1994 the lagoon was expanded to 2.2 acres as mitigation for construction of the Inn at Port Ludlow. The lagoon is not a shoreline regulated under the Shoreline Management Act.

The lagoon is reported to be approximately 10 feet deep with a firm bottom composed of sands and silt. A floating walkway connects the north and south shore. Mowed lawns cover upland areas north, south, and east of the lagoon. Ornamental and native shrubs and trees, including big-leaf maple and Douglas fir, grow between the lagoon and restaurant. California poppy, aster, and clover cover the south and west banks of the lagoon.

Soils between the lagoon and the Bay are relatively porous, so water seeps out from the lagoon and the water level can drop a foot per day if it is not replenished. Consequently, saltwater is pumped into the lagoon from the Bay on a continuous basis to maintain the water level.

The lagoon experiences considerable algae growth at times. Filamentous algae grows where water depths are less than 3 to 4 feet and covers much of the lagoon during the summer, at times creating floating algae mats and odors. Mechanical means are used periodically to remove algae from the lagoon. The lagoon is not used for boating or swimming.

Small clams and mussels occur along the bottom of the lagoon and attached to the algae. The algae probably also served as habitat for other invertebrates, including insects. Neither amphibians nor reptiles were observed near the lagoon during the 1992 Raedeke survey. Fish are known to occur in the lagoon but neither species nor population characteristics have been documented. WDFW has noted that, based on the elevation of the culvert connecting the lagoon with the Bay, the lagoon may be accessible to marine fish at tides above MHHW and probably provides some rearing habitat (Burkle, 2002).

American wigeon, bufflehead, and killdeer use the lagoon. Wigeon have been observed flying or walking from the adjacent shoreline to the lagoon. The birds engage in social and loafing activities while on the lagoon and feed on the lagoon’s algae and invertebrates. Wigeon also feed on lawn areas to the east of the lagoon.

Bufflehead have been observed diving for food within the lagoon. Bufflehead feed on crustaceans, which are readily available within the lagoon. Killdeer feed along the shoreline of the lagoon, presumably consuming a variety of invertebrates.

Mallard, pintail, lesser scaup, and merganser have been reported to use the lagoon. It is also expected that gull, belted kingfisher and American crow use the lagoon.

A variety of passerines and other species that favor upland habitats use shrubs and other vegetation near the lagoon and in the vicinity of the restaurant. These include song sparrow, violet-green swallow, robin, American crow, European starling, and purple finch. Both finches and starlings have been observed constructing nests in the shrubs and trees near the restaurant.
Mammals expected to use the lagoon include domestic dog and raccoon. Mole, shrew, mouse, rat, vole, red fox, and skunk may use the lagoon and nearby areas during some times of the year.

**Port Ludlow Bay and Marina**

The *Port Ludlow Marina Expansion Draft SEIS* (Reid Middleton, 2002a) addressed marine conditions in the vicinity of the marina. This section focuses on birds and other biological features not included in that document.

Much of the rocky substrate, and most of the structure associated with docks of the marina, contain barnacles, clams, mussels, anemones, and other marine invertebrates. No amphibians or reptiles are expected to use the marine environment on a regular basis.

Seventy-six bird species are expected to use the open water and shoreline areas of the marina and Bay. Of these, 18 species were observed during the Raedeke field studies.

Nineteen species of waterfowl have been reported or are expected to use the area. American wigeon and scoter are abundant in the area. Scoter feed by diving within Port Ludlow Bay while wigeon feed and loaf along the shoreline by the marina. Wigeon also feed on grassy areas next to the shoreline.

Common loon feed near the marina. Arctic and red-throated loon are expected to use the area during the winter.

Horned grebes feed near the docks. Red-necked, eared, and Western grebe have been reported or are expected to use the Bay and marina.

Other common birds seen near the marina included double-crested cormorant and pigeon guillemot. Brandt’s cormorant and pelagic cormorant are expected to use the Bay near the marina.

Sixteen species of shorebirds are expected to occur in the vicinity of the marina. Killdeer feed along the shoreline.

Glacous-winged and herring gull are commonly seen flying, feeding, and loafing on the docks and waters adjacent to the marina. Signs of use by gulls are common on most areas of the docks. An additional eight species of gulls and terns are expected to use the area.

Belted kingfisher and American crow have been reported flying near the marina. American robin and rufous-sided towhee use the area.

Domestic dog was the only mammal observed at the marina during the 1992 Raedeke survey. However, raccoon, river otter, gray whale, Dall’s porpoise, and harbor seal have been reported to use the marina and Port Ludlow Bay.
**Endangered, Threatened, Sensitive, and Other Priority Species and Habitats**

**Vegetation and Habitats**
The Washington Natural Heritage Program has developed a list of plant species considered to be Threatened, Endangered, or Sensitive within the state of Washington. A number of the species on these lists are thought to occur in Jefferson County, although several are known from historical records only. Federally-protected threatened and endangered plants are listed by the U.S. Fish and Wildlife Service.

Based on a review of existing information, no plant species listed as endangered, threatened, or sensitive by state or federal agencies are known or likely to occur in the area. The Washington Natural Heritage Program has no records for rare plants or high quality native ecosystems in the vicinity of the project (Washington Department of Natural Resources, 2003).

The National Wetland Inventory (NWI) shows the nearest upland wetland to be located more than 0.75 mile west of the Resort site. The nearest coastal wetland in the NWI database is about 0.5 mile from the site, across Port Ludlow Bay.

The Washington Department of Fish and Wildlife (WDFW) was contacted for information on Priority Habitats and Species (PHS) as well as other species and habitats of concern in the vicinity of the project site. The U.S. Fish and Wildlife Service responded on October 16, 2003, to a similar request by providing a list of federally protected species and species of concern possibly occurring in Jefferson County; however, they deferred to the WDFW’s PHS program for site-specific species information. The PHS report was prepared on October 9, 2003.

The PHS report included two types of priority habitat in the project vicinity. Priority estuarine zones occur along the north shore of Port Ludlow Bay (about 0.25 mile west of the marina) and on the south shore (about 0.5 mile south of the marina across the Bay). The NWI coastal wetland noted above is also a priority habitat in the PHS database.

**Fish**
The PHS report includes three species of priority fish species in Ludlow Creek, which drains into Port Ludlow Bay about a mile southwest of the marina: chum and coho salmon and winter steelhead. All three are anadromous species that use the creek for spawning and rearing and are found in open marine waters during most of their life cycle. The coho is a candidate for listing under the Endangered Species Act (ESA). No priority resident species were reported from the area.

Species listed as threatened under the ESA that could occur in marine waters in the project vicinity include Puget Sound chinook salmon, Hood Canal summer-run chum salmon, and bull trout.

**Birds**
Marbled murrelet and spotted owl are listed as threatened or endangered species by both federal and state jurisdictions, and both are reported by USFWS to occur in Jefferson County. Although marbled murrelet was noted by Raedeke (1992b) to use Port Ludlow Bay, the PHS report
included no indication of marbled murrelet or spotted owl occurrence within a mile of the project site. Although critical habitat for both species has been designated in Jefferson County, no such habitat occurs near the project site. Any use of the area by either species is highly unlikely.

The PHS report identified breeding sites for the following priority species within a mile of the project site:

- Bald eagle
- Great blue heron
- Purple martin

The eagle and heron nests are located across Port Ludlow Bay in the general vicinity of Tala Point, more than a half-mile south and east from the Port Ludlow Resort site. No nests are known within the Port Ludlow development area, nor would any be expected there because of a relative lack of suitable nesting sites (i.e., large snags or old-growth trees) and the level of human activity.

The nearshore area along the eastern shoreline of Port Ludlow Bay (along Tala Point across the Bay from the Resort) is shown in the PHS database as bald eagle territory used for feeding and possibly used for breeding. Bald eagles are often seen flying over Port Ludlow Bay and have been reported to occasionally land on trees in the vicinity of the Resort. The bald eagle is classified as threatened by the federal government and the State of Washington.

Purple martin nesting has been reported to occur at the Port Ludlow Marina. In late June of 1997, 30 birds were reported to use boxes installed on pilings at the marina. Those boxes are no longer present.

The common loon, a species classified as sensitive by WDFW, is frequently observed in the vicinity of the marina. The diet of common loon consists primarily of fish, crustaceans, and some plant material.

Five state candidate bird species (species under review by WDFW for possible listing as state endangered, threatened, or sensitive) may occur within the area:

- Pileated woodpecker
- Northern goshawk
- Vaux’s swift
- Western grebe
- Merlin

Signs of pileated woodpecker have been observed in upland forest habitats. However, this species typically occupies large home ranges (one square mile or more) and may forage a great distance from the nest. No nests have been reported, and potential nest sites (large, tall snags) are limited in the area given its logging history. Thus, while this species appears to forage in the area as part of its home range, it may not breed there because of a general lack of suitable nest sites.
Northern goshawk may forage in the area but are more likely to be found in the foothills and higher elevations in the Cascade Range. Vaux’s swift may forage in the area but are not likely to find their preferred nesting habitat of large dead-topped trees in mature and old-growth forests. Residents have reported sightings of Western grebe in Port Ludlow Bay. Merlins, a small falcon, may occur in the area in low numbers during certain times of year. They prefer more open habitats for feeding and typically feed on shorebirds in the Puget Sound area.

The short-tailed albatross is a state candidate species and a federal endangered species reported by USFWS as possibly occurring in Jefferson County. However, there is no indication in either the PHS data or the Raedeke report that this species occurs in the vicinity of the Port Ludlow Resort.

Six state monitor species (those managed by WDFW to prevent them from becoming endangered, threatened, or sensitive) are expected to occur within the area:

- Horned grebe
- Red-necked grebe
- Black-crowned night heron
- Green-backed heron
- Great blue heron
- Osprey

Horned grebe have been reported feeding in deeper water areas of the Bay and within the marina. Red-necked grebe and black-crowned night heron are expected to use the Bay during certain times of year. Green-backed herons may occur in the area, although they are most commonly found along woods-edged rivers. Great blue heron feed in shallow waters near the southern end of Port Ludlow Bay and have nested in the vicinity.

The osprey, a fish-eating hawk, has been reported to use Port Ludlow Bay and is known to nest in the vicinity. Ospreys typically breed along water bodies where fish are available as prey. Osprey breeding has been reported to occur both across the Bay and in a flat-topped Douglas fir tree about one-third mile west of the Port Ludlow Resort site.

A number of birds designated as state game species of concern are expected to occur in the area. Bufflehead use the artificial lagoon for feeding, loafing, and social activities. Bufflehead consume mostly animal material, including insects, snails, mollusks, and crustaceans, and are classified as state game species of concern due to their population status and sensitivity to habitat alteration. Other state game species reported to use the area included common merganser, hooded merganser, Barrow's goldeneye, and harlequin duck.

**Mammals**

A harbor seal haulout and parturition site is located in the Port Ludlow Bay/Admiralty Inlet area about two miles northeast of the Resort. Adult harbor seals use this site year-round, with pupping occurring in the summer. The PHS report included no other priority mammal species or habitats in the project vicinity.
The gray whale, listed as a federal and state endangered species, was observed by a resident at the entrance to Port Ludlow Bay (Raedeke, 1992b). Gray whales spend most of their time in the North Pacific Ocean but sometimes stray into Puget Sound during their migration from breeding grounds in Baja California to waters further north.

The Townsend’s big-eared bat -- a state candidate species -- may forage over forest and wetland habitats. Breeding and roost sites are not expected to occur in the project vicinity because of a general lack of large snags, caves, or other suitable cavities.

As noted previously, two state game species of concern that are expected to occur in the area may frequent the site: Columbian black-tailed deer and beaver.

### 3.3.2 Environmental Impacts

#### Upland Impacts Common To All Alternatives

This assessment of project impacts is based on information contained in the original EISs prepared in 1992 for the Inn at Port Ludlow (Jefferson County, 1992b) and the Port Ludlow Development Program (Jefferson County, 1992a), supplemented by current site information (presented above) and an analysis of project activities common to all three alternatives. Although each of the three alternatives would involve different types of new construction and human use, their impacts on plants and animals would be more similar than not.

All three alternatives will result in potential impacts to plants and animals from the following project activities and effects:

**General Construction Effects (short-term)**
- Land clearing and conversion
- Stormwater runoff
- Noise
- Emissions

**Indirect Effects (long-term)**
- Increased human activity
- Change in hydrologic patterns

**Short-Term Construction Impacts**

Land clearing activities typically involve the removal of existing vegetation and grading to prepare a site for construction. In some cases, vegetated areas will be replaced with impervious surfaces (such as parking lots or roofs). In other locations, the disturbed area will be replanted with the same or different species after construction has been completed. For all three Port Ludlow Resort alternatives, no wetlands, riparian zones, dunes, or other significant areas of native vegetation will be cleared, converted, or otherwise disturbed during construction.
Land-clearing activities will reduce the amount of vegetative productivity and cause a minor change in the distribution of habitat types and values within the Resort site. Smaller, less mobile animals whose home range lies wholly within a disturbed area or that cannot access other available habitat in the vicinity will likely perish. Some animals will be displaced temporarily to less disturbed areas in and adjacent to the Resort. Some mortality may occur as a result of that displacement, depending on habitat conditions and suitability.

The overall effect of land clearing and conversion activities on plants and animals is expected to be insignificant because animals currently using the site tend to be those that tolerate moderate to high levels of human activity. Furthermore, the areas to be cleared or converted to other uses have already been disturbed and currently offer little natural habitat. For example, reptiles and amphibians generally rely on forest duff, downed logs, and snags for habitat, but these habitats are generally lacking within the Resort area. Consequently, although full development of the Resort could further reduce populations of these species, the number of individuals potentially affected is low.

The change in land cover could increase stormwater runoff and erosion during construction. The potential for erosion and offsite transport of sediments will depend on the construction season, soil types affected, amount of exposed soils, slope conditions, surface drainage patterns, and mitigation measures employed. Construction impacts will largely be controlled through the implementation of best management practices (BMPs) tailored to suit site-specific conditions and the season of construction. Excavations in the upland areas will likely encounter some groundwater seepage, especially if construction occurs during the rainy season, but this seepage is expected to be minor (Jefferson County, 1992b). However, site topography and drainage characteristics are such that any turbid water escaping from a construction site will be intercepted and prevented from reaching marine waters by considerable expanses of lawn or other vegetated land in the northern portion and by the lagoon in much of the southern portion. Facilities to be constructed adjacent to the beach near the west end of the marina are more subject to uncontrolled runoff, but this area is predominantly flat from previous contouring and special runoff controls will be used there to prevent stormwater or any intercepted groundwater seepage from reaching the Bay. Consequently, no adverse effects on water quality in the Bay are anticipated.

Water quality in the artificial lagoon could be adversely affected if a large slug of turbid water were to escape a construction site at the southern end of the Resort. Such an event is likely to be very local and temporary. The sediments are expected to settle out quickly in the calm lagoon waters without adversely affecting plants or animals in the lagoon. The fact that lagoon water tends to discharge to the Bay via seepage means that the subsurface soils will serve as a filter, generally retaining all but the smallest suspended particles before the lagoon water reaches the Bay.

Noise typical of construction activities will be generated from the project site during the course of the construction period. In response to this noise and increased level of human activity, an overall reduction in local wildlife populations could occur due to avoidance of the area by sensitive species. However, most of the wildlife currently using the site is tolerant of at least moderate levels of noise and human activity, and the surrounding terrain and dense forest
vegetation in the area will tend to dampen the noise and largely prevent it from reaching areas outside the Resort. Consequently, any population reductions associated with additional noise or human activity during construction are expected to be minor.

Discernable (above-background) construction noise is presumed to carry a distance of a half-mile or less. For none of the three alternatives is such noise expected to reach and adversely affect known bald eagle or great blue heron nests located more than a half-mile across Port Ludlow Bay. This distance is much greater than the 400-foot protective zone (or 800-foot buffer zone) typically established by WDFW around eagle nests under the State of Washington Bald Eagle Protection Rule (WAC 232-12-292). Both species may be less likely to forage in the immediate Resort vicinity during construction, but the impact is expected to be minor since foraging activity is low and those that do use the site are used to some level of human activity in the immediate vicinity.

Of the state sensitive, candidate, and monitor bird species that could occur in the project vicinity, none will be significantly affected by any of the three alternatives. The primary basis for this conclusion is that none of these species breed nor find their high quality or preferred habitat in the upland Resort area, primarily due to the existing level of development and disturbance. Areas offshore of Port Ludlow Bay are sometimes used by such species as grebes, merlins, herons, and osprey, and construction noise or other construction-related activities could drive them further offshore. However, because suitable open-water habitat is fairly abundant here, such effects are expected to be temporary and minor.

Osprey breeding has been reported to occur as close as about one-third mile from the Port Ludlow Resort site. Although some construction noise could be carried that distance, it is not expected to have a significant impact on breeding behavior of this state-monitor species. WDFW has not published management recommendations for nesting osprey, but this particular nest is well beyond the 400- and 800-foot management zones established for bald eagle nests.

Neither marine mammals of concern nor their breeding habitats will be affected by any of the three alternatives, as they are located well beyond the potential zone of construction impacts. Surf smelt and sandlance spawning areas along the east-facing beach will not be affected by construction.

Gaseous emissions from construction equipment and vehicle transport will increase during construction, and the higher level of use during normal operations will increase vehicle emissions. These emissions will be controlled through standard emission control equipment and are not expected to exceed any air quality criteria nor to adversely affect plant or animal populations in the vicinity.

An accidental release of oil or fuel from construction equipment could lead to petroleum contamination of soil or water. The spill prevention BMPs to be employed during construction should serve to prevent a release from occurring. Even if a release did occur, the flat terrain at the construction sites will make it fairly easy to contain and clean up the spill before it reaches the artificial lagoon, Bay, or any other sensitive receptors.
Operational Impacts
Once the new Resort facilities are in operation, increased human activity will increase the likelihood of human disturbance to wildlife. The magnitude of these impacts at the Resort site is expected to be relatively minor because of the development that has already occurred there. Most of the Resort area has already been converted from its natural condition to a managed community. Much of the area proposed for new structures currently consists of mowed lawns, and few areas of shrubs and trees will be lost.

Species most affected will be those least tolerant of such disturbance, such as ground- and shrub-nesting birds (e.g., dark-eyed juncos, rufous-sided towhees and ruffed grouse) and ground-dwelling mammals (e.g., deer mice and small weasels). Domestic pets associated with the increase of residential use at the Resort could contribute to wildlife mortality through predation or habitat disturbance. Some species such as gulls, squirrels, raccoons, mice, and coyotes will likely do well and may experience growth in population size in the more developed environment.

Noise and other human activity may cause foraging eagles and other protected birds to avoid the Resort area and immediate surroundings, although the current level of such use is low. Considering that less-developed areas are located across the Bay and north of the Resort, birds diverted from the Resort area are expected to find more suitable foraging habitat elsewhere.

Over the life of the project, the maintenance of the Resort’s stormwater conveyance and treatment system as a result of the Resort developments will ensure that the new facilities are adequate to manage both the quantity and quality of runoff so that plants and animals are not adversely affected. In conjunction with the Resort’s plans for the application of fertilizers and pesticides, the stormwater collection and treatment system is expected to protect water quality over the long term.

None of the three alternatives would impact wildlife migration patterns, since no specific migratory corridors exist on the site. No protected plant species or wetlands would be affected by any alternative either in the short or long term. With stormwater management BMPs in place, project impacts are not expected to extend as far as the nearest state priority habitat – an estuarine zone about 0.25 mile west of the marina. None of the alternatives are expected to have any impact on Ludlow Creek (about one mile southwest of the marina) or on the three priority salmonid species that spawn and rear in that system.

Increased residential and Resort use will result in increased human use of the east-facing beach, primarily as occasional beach combing and related low-intensity use. If this activity were to occur when eggs of surf smelt or sandlance were present in the beach substrate, some eggs could be crushed and the reproductive success rate of these fish populations could be reduced. Due to the limited use of the beach by humans, the effect is expected to be small in terms of the percentage of eggs lost and the impact on local populations of these species.

The project is not expected to significantly affect individuals or populations of Columbian black-tailed deer or beaver, two state game species of concern in the area. Although use of the Resort site by these species may decrease, current use is believed to be low because of the lack of
suitable habitat. Any significant operational impacts are not expected to extend beyond the resort boundaries.

For all three alternatives, neither operations nor construction activities are expected to have any effect on the three ESA-listed threatened fish species that could occur in marine waters in the vicinity: Puget Sound chinook salmon, Hood Canal summer-run chum salmon, and bull trout.

**Alternative-Specific Upland Impacts**

In addition to the impacts common to all three alternatives (described above), additional alternative-specific impacts could occur. These are addressed in the following sections.

**Alternative 1: Preferred Project – 2003 Resort Plan**

A total of approximately 4 acres of lawns or ornamental vegetation will be disturbed during construction of Alternative 1, which includes demolition of the Harbor Master Restaurant located just north of the lagoon.

Alternative 1 includes 39 new townhomes in Admiralty III to be constructed south and east of the existing Conference Center. Both areas are flat and largely covered by lawn. The southern portion includes a few scattered trees and a circular grove of red alder trees and dense blackberry bushes about 25 feet in diameter. It is expected that most of the trees and the grove will be removed, although the revegetation plan is expected to include replacement of any trees lost.

Construction of Ludlow Bay Village residences (62 townhomes/condominiums) will mostly affect areas covered by lawn and, to a lesser extent, landscaped vegetation. Most of this construction will occur north and east of the lagoon. The new units of Ludlow Bay Village as well as the new restaurant and new recreation building near the waterfront on the west side of the Resort will be constructed on flat, mostly lawn-covered areas or existing rip-rap. Special erosion and sedimentation control measures will be employed here to minimize the potential for local water quality impacts on the Bay during construction.

Construction of the 8-foot-wide boardwalk along the waterfront between the new Restaurant building and the Inn may affect nearshore habitats in the immediate area. However, the impact on plants and animals is expected to be small because the work will occur above the ordinary high water line, BMPs will be installed to control runoff, and any soils or sediments reaching the intertidal zone should be carried away and dispersed by waves and tides.

Alternative 1 does not involve any alteration of the artificial lagoon. Demolition of the Harbor Master Restaurant and construction of residential units along the northern edge of the lagoon could cause water quality impacts, although BMPs will be installed and maintained during construction to control runoff. Any releases to the lagoon are expected to be temporary and limited to an increase in suspended sediments, which will largely settle or be filtered out by subsurface soils before the water seeps into the Bay.
Alternative 2: 1993 Resort Plan
A total of approximately 4 acres of lawns or ornamental vegetation will be disturbed during construction of Alternative 2.

Alternative 2 includes 50 new townhomes in Admiralty III which, like Alternative 1, would be constructed south and east of the existing Conference Center. Both areas are flat and largely covered by lawn. The southern portion includes a few scattered trees and a circular grove of red alder trees and dense blackberry bushes about 25 feet in diameter. It is expected that most of the trees and the grove would be removed, although the revegetation plan is expected to include replacement of any trees lost.

Construction of Ludlow Bay Village residences (72 townhomes/condominiums) would mostly affect areas covered by lawn and, to a lesser extent, landscaped vegetation. Most of this would occur north and east of the lagoon and near the waterfront on the west side of the resort. These are generally flat, lawn-covered areas. Special erosion and sedimentation control measures will be employed here to minimize the potential for local water quality impacts on the Bay during construction.

Alternative 2 does not involve any alteration of the lagoon. Construction of residential units along the northern edge of the lagoon could cause water quality impacts, although BMPs will be installed and maintained during construction to control runoff, similar to Alternative 1.

Alternative 2 would not involve restaurant demolition, a new waterfront commercial building, and recreational facilities in the western portion of the property, nor a boardwalk along the waterfront.

Alternative 3: No Action (1999 Resort Plan)
A total of approximately 4 acres of lawns or ornamental vegetation will be disturbed during construction of Alternative 3.

One of the differences between this and the other two alternatives is that Alternative 3 might not include development of the Admiralty III area east and south of the Conference Center. Thus, the existing lawn and scattered trees in that area would remain.

The major difference is that Alternative 3 would involve significant alteration of the artificial lagoon. The eastern two-thirds of the lagoon would be filled, lawn would be planted over that area as open space, and major facilities would be constructed north and east of the new lawn area. These facilities include, an underground parking garage, a 238-room addition to the Inn, a large conference center and a restaurant.

The filling of the lagoon would directly impact the fish, mollusks, plants, and other organisms that occur in the water as well as the waterfowl and other birds that feed and rest on its surface. A cofferdam could be constructed or other BMPs could be implemented so that sediment-laden water was contained and treated, although it is possible that the lagoon filling and adjacent construction could result in the discharge of some quantity of sediment-laden water to the Bay.
Although filling two-thirds of the lagoon will be disruptive to a variety of plants and animals that use the lagoon, this loss may not be significant. One aspect of this evaluation of significance is the fact that the lagoon was artificially constructed and water levels are artificially maintained by daily pumping of seawater. The lagoon is not a natural system and is not known to support any species of particular value or concern. Birds use the lagoon for resting and feeding (on algae and invertebrates primarily), but a reduction in lagoon area may have little affect on the magnitude of usage. On the other hand, public and regulatory concerns about filling the lagoon have been significant.

**Cumulative Impacts**

This section combines the impacts associated with development of upland portions of the Resort (described above) with the impacts related to the planned expansion of the Port Ludlow Marina. The upland commercial and marina construction activities will likely overlap in time.

The most notable impacts of each of the three Resort development alternatives on upland plants and animals are due primarily to an increased level of human activity and the affect of that activity on noise, traffic, and runoff in the immediate vicinity. The fact that the Resort site has largely been altered previously and that the areas to be impacted contain no natural vegetative features or valuable habitats means that, compared to new construction in a previously undeveloped location, the project impacts will be incremental and minor. This assumes that BMPs needed to control offsite impacts will be installed, monitored, and maintained properly throughout the course of construction. The one exception to this conclusion is the high degree of public and regulatory concerns associated with lagoon filling in Alternative 3.

In addition to these impacts, the effects on marine species and habitats due to marina expansion must be considered. These impacts are largely addressed in the draft and final SEIS prepared for that project (Reid Middleton, 2002a; Reid Middleton, 2002b) and can be summarized as follows:

- No adverse impacts to eelgrass or other marine macrophytes
- Displacement of small area of benthic habitat due to pile installation (currently projected to be 120 piling but subject to revision during final design), partially offset by increased surface area for future colonization by marine plants and animals
- Avoidance of significant numbers of juvenile salmonids by constructing only during the work window approved by WDFW
- Generation of noise, vibration, and turbidity during pile driving possibly causing salmon, birds, and mammals to temporarily avoid these areas
- Increase in overwater coverage may increase predation, alter migratory behavior, and reduce prey production and availability for salmonids.
- Increased shading of predominantly deep subtidal habitats beneath the floats resulting in minor decreases in macroalgae and benthic productivity, offset by substantial additional surface area for colonization by aquatic vegetation and invertebrates
Increased productivity of epibiota due to the floats providing additional area for colonization

Temporary and localized disruption of foraging behavior by forage fish and groundfish due to pile driving and elevated turbidity

No effects on fish access, fish refugia, substrate, shoreline, riparian conditions, flow and hydrology, current patterns, or saltwater-freshwater mixing patterns

No adverse modification or destruction of designated critical habitat for Chinook or Hood Canal summer-run chum, both species protected under the Endangered Species Act (ESA)

No significant impacts on bald eagles, marbled murrelets, or Stellar sea lions, all protected under the ESA

Possible short-term disruption of bird and marine mammal foraging behavior during construction but no long-term effects on either group.

No effects on populations of shellfish in Port Ludlow Bay

In summary, the greatest cumulative impacts on plants and animals caused by any of the three alternatives are likely to be centered on the nearshore marine environment in the immediate vicinity of the marina. This area will be subject to turbidity and shading effects from both marina expansion and to potential runoff of sediments and other contaminants from upland development near the shoreline. The magnitude of these impacts will depend on whether the marina and upland construction activities overlap and the effectiveness of BMPs and other measures intended to limit the disturbance (including the monitoring and maintenance of BMP effectiveness).

3.3.3 Mitigating Measures

Proposed (Alternative 1):

Upland Development

All three upland alternatives will include a revegetation and landscaping plan designed to control erosion and runoff during construction and to offset the permanent loss of plant cover. The first element of the plan involves restoring disturbed areas as soon as construction has ceased using species that mimic the vegetation located within the existing area. The impacted areas will be vegetated with native species that are perennials, have good soil-binding qualities, grow relatively quickly and provide habitat cover. The selection of vegetative species will also be based on the hydrologic requirements of the plants and their attributes, such as being able to support wildlife, to improve water quality, and to foster aesthetic appeal. Selecting vegetation found in the vicinity of restoration helps to avoid the spread of non-native and undesirable species, such as reed canarygrass, Scots broom, and Himalayan blackberry, and it also serves to foster survivability of the planted species.
• Native plants will also be established along the south and west sides of the lagoon. A conceptual planting plan is shown in Figures 10A – 10C, and described in Appendix C. Low growing grasses and shrubs will dominate, with special emphasis on species that provide food and cover for wildlife (such as dune grass, wild rose, twinberry, Douglas aster, salt grass, low growing willow, shore pine, and Douglas fir). Logs, rocks and other natural features will be included in the landscaping plan. Consideration will be given to the selection of tree species in this area in an effort to minimize view obstruction without compromising wildlife habitat. The proponent also intends to include new purple martin nesting boxes in this area. This additional landscaping will serve multiple purposes. It will: make up for lost primary productivity associated with land conversion; provide terrestrial habitat for birds and other small animals; serve as a partial buffer to control the quantity and quality of stormwater reaching the lagoon from adjacent lawns, roadways and parking areas; and provide aesthetic benefits.

• Alternative 3 would require special mitigation to compensate for the partial filling of the lagoon. A previous evaluation of lagoon filling by WDFW and Jefferson County led to the conclusion that replacement mitigation would have to be created in the vicinity of Ludlow Bay. Three potential mitigation sites were evaluated: the stream associated with the Oak Bay Road bridge, the Ludlow Creek area and a marshy area in the vicinity of Ludlow Point Villages. Further investigation will be necessary before mitigation plans can be developed at any of these or possibly other sites.

Marina Expansion
Because the final design for the marina expansion has not yet been completed, WDFW has not made a final determination of specific mitigation requirements to be attached as conditions to its Hydraulic Project Approval (HPA). Nevertheless, once these details have been worked out, the applicant has committed to prepare a mitigation plan that complies with the terms of the marina expansion HPA and WDFW’s goal of no net loss of habitat functions and values, as related to both the marina and upland developments.

Mitigation specific to the marina expansion includes the following elements:

• The kayak float will be relocated to deeper water and designed to include light-penetrating panels (one design under consideration is a grated polymer panel that allows water and sunlight to pass through the walking surface).

• Boater education regarding potential impacts of discharged or spilled wastes or hazardous materials will be increased, and a “no black water discharge” rule will be enforced.

• It is anticipated that the loss of benthic habitat associated with the installation of 120 new piling will be mitigated by removing a yet-to-be-determined number of old, unused wood piling from the head of the Bay (based on final design considerations, the applicant and WDFW will agree on a mitigation ratio which is expected to be 1:1 or greater).

• All in-water work will be conducted during approved work windows when salmon are not likely to be present.

• The U.S. Army Corps of Engineers has issued a permit for the 100-slip expansion; this permit includes concurrence by NOAA Fisheries and U.S. Fish and Wildlife.
3.3.4 Unavoidable Adverse Impacts

Under all three alternatives, including the marina expansion component, the following impacts are unavoidable: disturbance and displacement of some fish and wildlife species due to elevated levels of human activity and noise during the construction period; loss of vegetative cover and productivity between the time land is cleared and the time revegetation takes hold; increased surface runoff due to an increase in impermeable surfaces; loss of small areas of subtidal benthic habitat at the location of the new piling; possible loss of algal and epibenthic productivity at locations beneath the new floats; mortality to beach-spawning forage fish associated with increased human use of the beach; and increased risk of spills or discharge of gray/black water, petroleum products, or hazardous material.
Figure 10B - Planting - Fig A2

Port Ludlow Resort Plan DSEIS

Conceptual Lagoon Planting Plan – West & South Sides

Notes: 1. The locations of all features shown are approximate.
2. This figure is for informational purposes only. It is intended to assist in the identification of features discussed in a related document. Data were compiled from sources as listed in this figure. The data sources do not guarantee these data are accurate or complete. There may have been updates to the data since the publication of this figure. This figure is a copy of a master document. The master hard copy is stored by GeoEngineers, Inc. and will serve as the official document of record.

Reference: Drawing entitled "Port Ludlow Resort, Site Plan" dated September 2003, by Reid Middleton Inc.
Notes:
1. The locations of all features shown are approximate.
2. This figure is for informational purposes only. It is intended to assist in the identification of features discussed in a related document. Data were compiled from sources as listed in this figure. The data sources do not guarantee these data are accurate or complete. There may have been updates to the data since the publication of this figure. This figure is a copy of a master document. The master hard copy is stored by GeoEngineers, Inc., and will serve as the official document of record.

Reference: Drawing entitled "Port Ludlow Resort, Site Plan" dated September 2003, by Reid Middleton Inc.
3.4 LAND AND SHORELINE USE

3.4.1 Affected Environment
Port Ludlow is located in a generally rural portion of eastern Jefferson County, approximately six miles north of SR 104. The MPR is centered on the inner portion of Port Ludlow Bay and extends both north and south of this inner portion of the Bay. The Resort complex is situated on the north shore of the Bay and includes both shoreline and upland properties.

Project History
Port Ludlow was originally settled in the mid-1800s as a shipbuilding, logging, and sawmill community. By the 1880s, Port Ludlow encompassed a sawmill, log dump, numerous homes, a hotel, and other facilities. These facilities were generally located in the area of the current Resort. The sawmill was permanently closed in 1935 and subsequently dismantled. The existing homes were moved to Port Gamble.

Development of the current Port Ludlow Resort and residential community was initiated in the late 1960s, with construction of the Harbor Master Restaurant, Conference Center, and the marina. The Admiralty I and II areas were platted in 1968, and the plat of Ludlow Bay Village was recorded in 1994.

As approved by Jefferson County, the Port Ludlow MPR as a whole will include up to 2,250 dwelling units (1,800 of which have been developed to date), the Resort complex, a 27-hole golf course, a small retail center, and extensive parks and open space.

Existing Resort Development
The Resort complex is located on the north shore of Port Ludlow Bay, in the area of the original shipbuilding/sawmill community. To date, approximately three-quarters of the Resort area has been developed. Existing Resort development includes:

- The Harbormaster Restaurant (5,000 square feet/120 seats)
- The Inn at Port Ludlow (37 rooms)
- Residential units (25 townhomes and one single-family dwelling within Ludlow Bay Village, and 64 condominiums within the Admiralty I and II areas)
- The LMC Beach Club (private recreation facility, open to guests at the Resort)
- One conference building
- Paved and graveled parking areas
- Open space including “Mill Pond” (an artificial, man-made lagoon), areas of open lawn, informal trails, and a viewing area at Burner Point; and
- A 280-slip marina with support facilities. The marina serves Port Ludlow area residents, guests, and boating groups.

The 27-hole Port Ludlow Golf Course, located on the south side of the Bay, is a major attraction for visitors to the Resort.
Project Area
The Resort complex is surrounded by residential portions of the larger Port Ludlow MPR to the north and west and is bordered by Port Ludlow Bay on the south and east. Immediately west of the Resort complex, properties around the inner portion of Port Ludlow Bay are occupied by single-family homes and condominiums. Properties further upland are situated atop the hill and are occupied by single-family homes. The majority of the Resort complex is separated from surrounding single-family development by Oak Bay Road.

Properties immediately west of the Marina lie within a designated “Single-Family” area and are occupied by four single-family dwellings. These properties access Oak Bay Road via Scott Court, and for purposes of this discussion are referred to as the “Scott Court Properties.” A four-slip dock serves these residential lots. This dock, known as the “Scott Dock,” is located approximately 150 feet from shore, approximately 300 feet west of the Port Ludlow Marina C- and D-Docks.

Within the inner portion of the Bay, the number of existing private docks is small; these docks are generally located on the southwestern shore of the Bay. The Meydenbauer Bay Yacht Club uses four dock slips at the west end of Port Ludlow Bay, as well as rafting boats together and anchoring boats in the Bay, as a satellite club facility.

Land Use Regulations
Current land use regulations pertaining to Port Ludlow stem from the 1998 Jefferson County Comprehensive Plan, designating Port Ludlow a Master Planned Resort (MPR), and the 2000 Port Ludlow Development Agreement. Jefferson County Ordinance Number 08-1004-99, adopted in October 1999, establishes the Port Ludlow Development Regulations consistent with the MPR designation established in the Comprehensive Plan.

Under Ordinance No. 08-1004-99, the Port Ludlow MPR is divided into several zoning districts, one of which is the “Resort Complex/Community Facilities Zone.” The purpose of this zone is to provide amenities and services associated with a Resort and the surrounding community and to support existing residential uses. Uses allowed in this zone “…recognize the recreational nature of the Resort and include the existing and planned Resort complex, as well as limited permanent residential uses, and non-resort community facilities including a beach club and Kehele Park.”

The Port Ludlow land use designations are shown in Figure 11.

The approved Resort Plan is described in Section 3.90 - “Resort Development” of Ordinance No. 08-1004-99. Section 3.901 identifies the specific facilities (and their sizes) that are to be developed within the Resort Complex/Community Facilities Zone. Section 3.90 envisions the Resort as a destination resort for large groups, as well as the traveling public. Section 3.901 “Resort Plan” identifies Resort facilities encompassing
Port Ludlow Comprehensive Plan – Land Use Designations

FOR INFORMATIONAL PURPOSES ONLY - Jefferson County does not attest to the accuracy of the data contained herein and makes no warranty with respect to its correctness or validity. Data contained in this map is limited by the method and accuracy of its collection. Product of Jefferson County Integrated Data Management Systems. In addition to recognizing legal pre-existing land uses, Jefferson County recognizes pre-existing lots of record as legal lots.

/idms5/comp-clips/ludlow.aml by davidh on November 04, 1998
498,300 square feet of development, not including residential structures. Facilities include a 275-room hotel, two restaurants, resort retail, a conference center, a recreation complex, museum or interpretive center, amphitheater, youth center, an expanded marina, and public open space. Multi-family and single-family structures are permitted uses within a density not to exceed 10 units per acre. Revisions to this Resort Plan are provided for in Sections 3.905 and 3.906.

The MPR as a whole is subject to a development cap (e.g., a maximum limit of development). To implement and monitor this cap, while providing for flexibility regarding future land uses, a measurement and transfer system was developed. This system is based on the actual number of residential lots, residential units, and equivalent residential units for commercial development. The unit of measurement is termed an “MERU” (Measurement Equivalent Residential Unit). Total MERUs are not to exceed 2,575; total residential units are not to exceed 2,250. Jefferson County maintains an official MERU Record.

Since adoption of the 1999 MPR regulations, it has become evident to the owners of the Resort that a destination Resort oriented to large conference groups is not feasible for Port Ludlow. Changes in the resort market have resulted in a need for a resort more oriented to the traveling public. A change to the Resort Plan as outlined in Section 3.906 of Ordinance No. 08-1004-99 is therefore proposed.

In addition to market factors, the 1995 plat of Ludlow Bay Village (located north of the marina within the Resort area) and subsequent construction of townhomes within this plat, has limited the ability of Port Ludlow Associates to construct certain facilities anticipated by the 1999 MPR regulations.

### 3.4.2 Environmental Impacts

#### Short-Term Construction Impacts

**Alternatives 1, 2, and 3:**
For all alternatives, construction activities will result in short-term impacts to the existing Resort uses. Marina and upland construction activities will also result in short-term impacts to adjacent residential properties. Construction activities will temporarily increase noise levels and levels of suspended particulates (dust); fumes from construction equipment may be noticeable; and truck and marine barge traffic will increase.

Construction noise will be generated primarily by operation of heavy machinery for grading and earthwork and from pile driving, but will also come from the use of generators, other small engines, and hand tools. Construction hours will be limited to 7:00 a.m. to 6:00 p.m., Mondays through Saturdays.

For the Port Ludlow Marina expansion, the *Marina Expansion SEIS* concluded that construction noise will be generated primarily by pile driving and will be heard from the Resort area and the Scott Court properties to the west. Data from the *Shilshole Bay Marina Dock Replacement/Moorage Expansion Project Draft Supplemental Environmental Impact Statement*
(Port of Seattle, 2000) indicates that, from a noise standpoint, the “worst case” pile driving scenario is a diesel-powered hammer driving steel piles into a very hard subsurface soil layer, with no noise abatement shrouding. In this scenario, the Leq measured 100 feet from the diesel hammer was 95.9 dBA. At 180 feet, the Leq will be 90.8 dBA and at 300 feet, 86.4 dBA.

The noise level will be determined largely by the number of piling to be driven and the depth to which they are driven. Given the subsurface conditions at the Marina, it is anticipated that both a vibratory hammer and a drop hammer and/or diesel hammer will be used. The pile driving will occur over an approximate 45-day period. Because sound travels well over water, construction noise will likely be heard around the entire Bay, but will not be as significant.

WAC 173-60 states that noise emitted by any commercial or industry activity shall not exceed those levels established by the Washington State Department of Ecology. WAC 173-60.030 classifies residential sites and parks and recreational sites as Class A EDNA. The maximum noise exposure levels for noise emitted in Class A EDNA that is received by Class A EDNA is 55 dBA (WAC 173-60-040).

WAC 173-60-050 lists activities that are exempt from the maximum noise level requirements of WAC 173-60-040. Section 3-a exempts sounds originating from temporary construction sites as a result of construction activity with the exception that these sounds are not allowed between the hours of 10:00 p.m. and 7:00 a.m. in Class A EDNA receptors.

Impacts from increased construction truck and barge traffic will be concentrated within the shoreline area, although the pile-driving barge will also be located in the vicinity of the Scott Dock. The barge will not block access to that dock. Fumes from the construction activities are not anticipated to be significant.

**Long-Term Impacts**

**Alternative 1: Preferred Project – 2003 Resort Plan**

Construction of Alternative 1 would result in build-out of the Resort complex, with Resort facilities designed to serve the traveling public. Conferences will still be accommodated but on a smaller scale and would be housed in existing facilities such as the Heron Beach Inn, the Bay Club, the Beach Club, and the relocated Harbor Master Restaurant. Large, outdoor special events would no longer be accommodated. At build-out, development within the Resort area would include:

**Residential Units**

190 residential units, described as follows:

- Admiralty area – The existing 64 stacked condominiums within Admiralty I and II, together with 39 new townhomes in Admiralty III (32 stacked flats and 7, two-story townhomes).
- Ludlow Bay Village – The existing 25 townhomes and one single-family dwelling, together with 62 new stacked flat condominiums (48 stacked flats, and 14, 2-story
townhomes). This is an increase of 30 units over the existing 58-lot plat of Ludlow Bay Village. Vehicular access to existing townhomes within Ludlow Bay Village will be restricted to Heron Road and will be separated from access to the adjacent Inn.

- New townhomes will maintain the existing architectural theme established in Ludlow Bay Village (i.e., New England/Colonial) and will be 1,200 – 1,500 square feet in size - smaller than existing townhomes in Ludlow Bay Village. The smaller size is intended to allow for an overall variation in product type and price range.

Typical floor plans for the new residential units are shown in Figure 12A.

**Hotel**

- Inn at Port Ludlow– Existing 37 room inn, including restaurant and lounge. The existing building will remain unchanged, however, vehicular access to the Inn will be modified. Vehicular access to the Inn and its associated parking will be restricted to Gull Drive and separated from access to the adjacent townhomes. The existing 36-stall parking lot will be reconfigured to provide 55 spaces. Regarding interior improvements, the size of the formal restaurant will be reduced to double the size of the Fireside Lounge.

**Waterfront Facilities**

- Waterfront Commercial Facility. A new 1-story building will be located on the shoreline near the west end of the marina which will contain the Dock Master’s office, the marina maintenance area, and a store for marina tenants and guests. This facility will be situated adjacent to the relocated Harbor Master Restaurant. The building will maintain the New England/Colonial architectural theme; a preliminary architectural elevation of the building is shown in Figure 12B.

- Harbor Master Restaurant (relocated)  
  The existing restaurant building will be demolished, and the restaurant will be relocated to the waterfront commercial facility near the marina. The seating capacity will be reduced from 120 people to 90 people (inside seating for 60, together with outside seating for 30). A preliminary architectural elevation of the building is shown in Figure 12B.

- Private Recreational Facility - 7,500 square feet  
  A new 2-story, indoor recreation facility will be located adjacent to the waterfront commercial facility near the west end of the marina. The facility will include an indoor-outdoor swimming pool, spa, and a fitness center and will be available only to residential property owners within Ludlow Bay Village and their guests, guests at the Inn, and guests at the marina. The recreation building will also be designed in the
Figure 12A - Building Layouts
Port Ludlow Resort Plan DSEIS
R-8 (600) Ludlow Bay Village

Typical Floor Plans
Figure 12B - Typical Elevations
Port Ludlow Resort Plan DSEIS

RESIDENTIAL UNITS BY AREA

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COMMERCIAL BUILDINGS

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<td>E</td>
<td>RECREATION &amp; FITNESS CENTER, SWIMMING POOL</td>
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AREAS R.1 RECREATION BLDG & RESTAURANT BLDG

AREAS R.2, R.3, R.4, R.6 & R.7

ARCHITECTONICS
DESIGN & PLANNING CONSULTANTS
P.O. BOX 343
1218 MARKET STREET, KIRKLAND, WASHINGTON 98033
New England/Colonial style; a preliminary architectural elevation of the building is shown in Figure 12B.

- LMC Beach Club Recreational Facility and Bridge Deck
  No changes to this existing private facility or its parking areas are proposed.

- Port Ludlow Associates Offices (existing building)
  Offices for Port Ludlow Associates will be moved from their current location (off Paradise Bay Road) to the old conference center along Oak Bay Road, in the north end of the RC/CF zone. Approximately 30 employees will be located in this building.

- Maintenance building – 2,900 square feet
  A new maintenance facility serving the Inn and other Resort operations will be located just east of the old conference center facility.

- Central Receiving Dock
  A new, approximately 1,000-square-foot central receiving facility will be located within an existing parking lot on the north side of Harbor Drive.

- Off-street parking (existing and proposed)
  All new residential units will include off-street parking for two cars. A total of 324 off-street stalls will be provided in a series of paved parking lots serving the marina, commercial, and recreational uses in Ludlow Bay Village.

- Designated Helipad for Emergency Evacuations (proposed)
  A 20-foot by 20-foot paved helipad for use by Fire District #3. The pad will be located north of Marina View Drive between Oak Bay Road and Olympic Place.

- Open space, trails (existing and proposed)
  A designated, signed trail system will be developed within Ludlow Bay Village to provide for better pedestrian circulation and access to public portions of the shoreline. The pedestrian access/trail plan is shown in Figure 13. This system will include an eight-foot-wide wooden boardwalk/esplanade along the shoreline that will extend from the new restaurant, east to the Inn. Existing open space along the south side of the artificial lagoon will be retained, as will the open space at the end of Burner Point. Parking for access to the public trails will be located at the upper community lot.

- Infrastructure Improvements
  Storm Drainage – New water quality vaults will be added at each of the inlets to the artificial lagoon to supplement water quality treatment. Also, within Admiralty III, new stormwater detention facilities, as well as water quality facilities, will be constructed. The existing storm drainage collection/conveyance system within Ludlow Bay Village will be evaluated to determine if the 100 year capacity is adequate to accommodate the additional runoff from the Admiralty III area.
Notes: 1. The locations of all features shown are approximate.
2. This figure is for informational purposes only. It is intended to assist in the identification of features discussed in a related document. Data were compiled from sources as listed in this figure. The data sources do not guarantee these data are accurate or complete. There may have been updates to the data since the publication of this figure. This figure is a copy of a master document. The master hard copy is stored by GeoEngineers, Inc. and will serve as the official document of record.

Reference: Drawing entitled “Port Ludlow Resort, Site Plan” dated September 2003, by Reid Middleton Inc.
Sanitary sewer and water service will continue to be provided by the Olympic Water and Sewer Inc. New hook-ups will be required, but the capacities of the existing systems are adequate to handle the increased use.

- Marina - 380 slips (280 existing slips + 100-slip proposed expansion)
  The existing Marina will be expanded by up to 100-slips. The expansion will occur both westward and waterward.

Build-out of the Resort as proposed in Alternative 1 will increase the intensity of use within the Resort complex. The 101 new residential units will roughly double the number of existing residential units and potentially double the permanent residential population. Assuming a household size of two persons per unit, 202 new residents may be expected. It is unknown to what extent these households will be permanent residents, seasonal occupants, or temporary visitors. It is not anticipated the new residents will include a significant number of school-age children.

The new buildings and expanded marina will be visible from within the Resort, travelers on Oak Bay Road, and homes along Gamble Lane (above the Resort). The increased building intensity will also be visible from across the Bay, but these views will be distant. The design of the new residential and commercial buildings will be consistent with the New England/Colonial style established in Ludlow Bay Village. No building will exceed 35’ in height.

The Marina Expansion SEIS concluded that the expanded marina will moderately impact portions of views from the Scott Court properties, Oak Bay Road, and Burner Point. A detailed analysis of impacts to views from the marina expansion is included in the 2002 Port Ludlow Marina Expansion Final Supplemental Impact Statement.

The new uses, especially the commercial uses and associated increased use of parking areas, will generate additional light and glare. Noise levels associated with increased vehicular and boat traffic and increased use of the waterfront area will increase over existing levels. No unusual sources of noise are anticipated. The Harbor Master Restaurant, a commercial use, will be relocated from the residential area to the new commercial area along the waterfront.

The Marina Expansion SEIS also concluded that odors associated with a marina, such as exhaust from boats, will also likely increase incrementally. Extensive boat repairs are not allowed within the Marina, so odors from repair activities will not be significant.

Impacts of Alternative 1 on adjacent land uses (i.e., outside the Resort Complex) relate primarily to potential impacts to the Scott Court residential properties. The Marina Expansion SEIS concluded that the marina expansion will result in Port Ludlow docks lying within approximately 150 to 200 feet of the Scott Dock and within 250 to 350 feet of the closest residential lot (currently undeveloped). Residents of Scott Court have expressed concerns regarding the increased boat activity adjacent to their homes, the ability of boats and seaplanes to access their dock, and the ability to expand their dock if the marina expansion were to be approved.
Alternative 2: 1993 Resort Plan
Because the overall intensity of Alternative 2 is similar to Alternative 1, the overall land-use impacts would be similar to those of Alternative 1. Land-use impacts within specific areas of the Resort complex would differ, however.

With regard to residential units, 50 new units would be added to the Admiralty area (versus 39 new units with Alternative 1). Within Ludlow Bay Village, the number of new units would total 49 (versus 62 with Alternative 1).

With Alternative 2, there would be less separation of residential and commercial uses within Ludlow Bay Village. The Harbor Master Restaurant would remain in its current location, the access to the Inn and adjacent townhomes would remain in its current configuration, and the western end of the waterfront area would be residentially developed, rather than occupied by commercial uses. A new Town Hall, rather than a new recreation facility is proposed.

It is assumed the architectural style of the new buildings would be consistent with the New England/Colonial style, although no architectural elevations are available.

The proposed marina expansion would be the same as that proposed in Alternative 1.

Alternative 3: 1999 Resort Plan (No Action)
Build-out of Alternative 3 would result in the most intense development of the Resort complex. If construction of new townhomes within Ludlow Bay Village is halted, new development would consist of commercial Resort facilities – outdoor sports facilities, an expanded conference center and hotel, a youth center and museum, and a parking garage. The new resort facilities would be focussed in the Ludlow Bay Village area and would require partial filling of the lagoon and 100 percent approval of the Ludlow Bay Village Homeowner’s Association through a Redevelopment Agreement. Approximately half of the existing artificial lagoon would be filled and replaced with open lawn area. Aside from the new hotel, no new residential units would be added.

Given the existing level of residential development that has occurred in Ludlow Bay Village since adoption of the 1999 Resort Plan, full development of the Alternative envisioned in 1999 can no longer be achieved. Certain uses, such as the amphitheater, are no longer feasible. More intense development could, however, still occur along the north side of the lagoon at the western end of the waterfront area and along the slopes adjacent to Oak Bay Road. In this scenario, no new development is proposed within the Admiralty area; the existing conference center building would, however, be converted to a youth center. This issue is also addressed in Chapter 2, Section 2.2 Preferred Project and Alternatives.

If, however, a new Resort Plan is not approved, and development of townhomes within Ludlow Bay Village continues, it is unclear what facilities would exist at build-out. The current plat provides for four additional single-family homes along the shoreline, as opposed to additional Resort facilities. The artificial lagoon would remain at its present size, and the Harbor Master Restaurant would remain in its current location. Up to 28 additional townhomes could be constructed. Given the demand for improved Resort facilities, it is unlikely, however, that the
owner would fully develop their remaining ownerships only with residential uses; more intense use of the Resort waterfront is anticipated.

Alternative 3 would likely result in the greatest increase in noise, light, and glare and overall vehicular and people use of the site and greatest water consumption and waste production. The character of the Ludlow Bay Village area could be that of a commercial resort, with a limited residential environment. Visitors to the Resort would be accommodated in a hotel setting, rather than townhomes or condominiums.

The proposed marina expansion associated with Alternative 3 is the same as that proposed in Alternatives 1 and 2.

3.4.3 Mitigation Measures

Proposed (Alternative 1):

Construction Impacts
- Hours of construction will be limited to 7:00 a.m. to 6:00 p.m., Mondays through Saturdays.
- Stationary construction equipment will be positioned as far as possible from residential properties.
- The construction contract will require that all mufflers are maintained in good working order.
- Any dust will be suppressed by utilizing wetting techniques.
- Energy-efficient equipment will be used to control emissions.

Long-Term Impacts
- The proposed project will provide for an economically sustainable Resort function.
- The proposed Resort site plan will separate residential and commercial uses to minimize conflicts associated with traffic, noise, light, and glare.
- The proposed Resort Plan acknowledges the existing residential character and architectural style of the central and eastern portions of the Ludlow Bay Village area.
- New street and parking lot lighting will be designed to shield and focus light.

From the Port Ludlow Marina Expansion Final SEIS (2002):
- The new docks associated with the marina expansion will provide adequate fairway and maneuvering area for access to existing Scott Docks.
- The new docks associated with the marina expansion will not block significant portions of existing views.
3.4.4 Significant Unavoidable Adverse Impacts

Build-out of the Resort will result in more intense development of the project area. Increased development and use of the area will result in increased activity levels, vehicular traffic, noise, light, and glare; this increased intensity of use will be noticeable to existing users and residents within the Resort.
3.5 LAND AND SHORELINE USE – RELATIONSHIP TO PLANS AND POLICIES

3.5.1 Affected Environment

Jefferson County Comprehensive Plan

The Jefferson County Comprehensive Plan, adopted in 1998, addresses Master Planned Resorts (MPRs) in Chapter 3 – “Land Use and Rural Element.” The Comprehensive Plan describes MPRs, establishes MPR Goals and Policies, and identifies an MPR Strategy and Action Items, as follows:

Master Planned Resorts

“Master planned resorts (MPRs) are large-scale, self-contained developments that are based on an integrated, conceptual master plan, yet are typically developed in stages depending on market demand or other factors. Recent amendments to the Growth Management Act (GMA) allow jurisdictions to recognize existing master planned resorts which may constitute urban growth outside of Urban Growth Areas as limited by RCW 36.70A.362.

Jefferson County currently contains one existing master planned resort, Port Ludlow. The master planned resort of Port Ludlow is characterized by both single-family and multi-family residential units with attendant recreational facilities including a marina, resort, and convention center, and is one of Jefferson County’s fastest growing communities. Located on Port Ludlow Bay and surrounded by an area of significant natural amenities, Port Ludlow is suited to be designated as a master planned resort.

Port Ludlow is managed by Olympic Resources Management (ORM), a corporation which is responsible for the phased development of the community and resort. Although Port Ludlow is a planned development, its overall phased development pattern may change according to changing market conditions. Any change in the development plan will need to be reviewed for consistency with the Comprehensive Plan and for compliance with Port Ludlow’s FEIS and all applicable federal, state, and local regulations. Currently, a development agreement is being prepared between ORM and the County that, if adopted, will allow for flexibility in the overall development of the Port Ludlow master planned resort within the limits of a residential cap of 2,250 residential units and a total of 65,000 sq. ft. of retail/commercial development.

The Comprehensive Plan contains policies in LNG 25.0 that help guide development at Port Ludlow. Many of Port Ludlow’s goals and policies were drafted from issues identified by community residents who, through the establishment of community planning groups, articulated their desired plan for Port Ludlow’s future development. The goals and policies identified by the community and included in Jefferson County’s Comprehensive Plan focus on maintaining and enhancing Port Ludlow’s recreational and community amenities and preserving the community’s lifestyle.”
The Goals, Policies, and Strategies related to the Port Ludlow MPR and the Resort area are as follows:

**Goals:**

**LNG 25.0** Maintain the viability of Port Ludlow as Jefferson County’s only existing Master Planned Resort (MPR) authorized under RCW 36.70A.362.

**Policies:**

**LNP 25.1** Ensure that development in Port Ludlow complies with County development regulations established for critical areas and that on-site and off-site infrastructure impacts are fully considered and mitigated.

**LNP 25.2** The provision of urban-style services to support the anticipated growth and development at Port Ludlow shall occur only within the designated MPR boundary.

**LNP 25.3** No new urban or suburban land uses will be established in the vicinity of the Port Ludlow Master Planned Resort.

**LNP 25.4** The total number of residential lots allowable within the MPR boundary shall not exceed the 1993 Port Ludlow FEIS total of 2,250 residential dwelling units.

**LNP 25.5** Port Ludlow shall accommodate a variety of housing types, including affordable housing, single family and multi-family housing, and assisted living care facilities.

**LNP 25.6** Support efforts to preserve and protect Port Ludlow’s greenbelts, open spaces, and wildlife corridors.

**LNP 25.6.1** Support the establishment of a Ludlow Creek Nature Preserve.

**LNP 25.7** No preliminary plats will be processed by Jefferson County for the 200-acre area south of the Port Ludlow Golf Course within the MPR boundary (as depicted on the official Jefferson County Land Use Map) until such time as a conceptual site plan has been approved by the County.

**LNP 25.8** The Port Ludlow Master Planned Resort commercial area shall be designated as the Port Ludlow Village Commercial Center.

**Strategies:**

Jefferson County’s strategy is to coordinate efforts with Port Ludlow to support its development as an existing Master Planned Resort while containing “urban” type development within the boundaries of the Resort.
Action Items:

1. Establish procedures for monitoring growth to ensure that Port Ludlow does not exceed its targeted population and housing projections. (Corresponding Goal: 25.0)

2. Encourage the Port Ludlow MPR to provide a mixture of affordable housing types including single-family, multi-family, and assisted care living facilities. (Corresponding Goal: 25.0)

3. Allow for the adoption of a Development Agreement between the Jefferson County and Olympic Resource Management for the Port Ludlow MPR pursuant to RCW 36.70B.170. (Corresponding Goal: 25.0)

The Jefferson County Comprehensive Plan also includes goals and policies related to both Parks and Recreation (Chapter 6) and Shorelines (Chapter 7).

Regarding Parks and Recreation, the goal is to develop and maintain facilities that are responsive to the needs and interests of Jefferson County residents and visitors. The associated policies state that existing facilities should: not be overburdened; be planned to support designated residential development; and should include adequate infrastructure. The facilities should also be consistent with the needs and desires of the citizens of the area and be compatible with the Shoreline Management Master Program. Policies related to Parks and Recreation are listed in Appendix D.

Regarding Shorelines, Comprehensive Plan goals relate to preserving the long-term benefits of shoreline resources and allowing development that is compatible with the natural environment. Associated policies establish a hierarchy of preferred uses, promote public access, and allow development that is compatible with the natural processes, conditions, and functions of the shoreline. Policies related to Shorelines are listed in Appendix D.

Jefferson County Shoreline Management Master Program

The Shoreline Management Act (SMA) of 1971 (Revised Code of Washington, RCW, Chapter 90.58) was enacted to provide for the management of the shorelines of the state by planning for and fostering all reasonable and appropriate uses. It is the policy of the state to protect against adverse effects to public health, land and its vegetation and wildlife, and the waters of the state and its aquatic life. Permitted uses in the shorelines are to be designed and conducted in a manner to minimize, insofar as practical, any resultant damage to the ecology and environment of the shoreline and any interference with the public’s use of the water.

The SMA gives responsibility to the local governments in initiating and administering the regulatory program of the Act. As a result, Jefferson County developed and adopted a Shoreline Management Master Program (SMMP) in March of 1989. The SMMP is a regulatory ordinance with performance standards for development intended to implement adopted goals and policies.

The SMMP is adopted as Section 5 of the Jefferson County Unified Development Code. All shorelines subject to the SMA are given a shoreline environment designation designed to locate
the most appropriate uses in particular areas and to enhance the character of that shoreline environment.

Two shoreline environment designations are located within the Port Ludlow Resort complex. The south shoreline, including Burner Point, is designated “Urban.” The east shoreline of the Resort complex (excluding the east side of Burner Point) is designated as “Suburban.” Shoreline environment designations are shown in Figure 14.

The Urban shoreline environment is an area of high intensity land use, including residential, commercial, and industrial development. The policies and performance standards of the SMMP, Urban Environment give preference to water-dependent, water-related, and water-enjoyment uses. Shoreline policies for the Urban Environment (SMMP 4.105) follow:

**Policy 1.** Development in urban areas should be managed so it enhances and maintains the shoreline for a variety of urban uses, with preference given to water-dependent and water-related uses. Water-enjoyment uses that provide access to and enhance enjoyment of the shoreline for a substantial number of persons should also be given priority in urban areas.

**Policy 2.** Efficient utilization of existing urban areas in a manner consistent with this program is encouraged before further expansion into non-urban areas occurs.

**Policy 3.** Pedestrian and visual access should be provided to and along the urban waterfront area. Public access to and along the water’s edge should be coordinated in a walkway system and linked to adjacent existing or future walkways.

**Policy 4.** Urban development should provide for public views to the water. Wherever possible, the waterside of shoreline buildings should include windows, doors, and public areas that enhance enjoyment of the shoreline and present and interesting, attractive view of the development from the water.

**Policy 5.** Development in urban areas should preserve and enhance significant architecture and historic buildings.

**Policy 6.** Unique natural features of the urban shoreline, such as bluffs, dunes, and wetland areas, should be preserved and protected.

**Policy 7.** Parking facilities should be located on the upland side of buildings away from the shoreline.

**Policy 8.** Internal and perimeter landscaping should be incorporated and maintained to screen parking facilities from the shoreline and adjacent properties.

**Policy 9.** Development within the shoreline urban area should be consistent with other adopted plans, programs, or policies.
Figure 14 - Shoreline
Port Ludlow Resort Plan DSEIS

Shoreline Environment Designations

Legend
- Urban
- Suburban
- Conservancy
- Natural

Puget Sound

Port Ludlow Bay

Tala Point

Port Ludlow Master Plan Resort Boundary

Teal Lake
The Suburban shoreline environment is an area where residential activity may approach urban density, but usually where densities permit space for small numbers of livestock, gardens, or wood lots.

Shoreline uses are classified as “primary,” “secondary,” or “conditional,” in order of preference or appropriateness on a particular shoreline. Within the “Urban” shoreline, water-related and/or dependent commercial uses, marinas, recreational facilities, residential development, transportation facilities, and utilities are “Primary” uses (SMMP 4.40). Residential development and day-use recreational facilities are deemed as preferable within the Suburban designation and are classified as “primary” (SMMP 4.40).

Policies and specific Performance Standards for commercial development, marinas, recreational facilities, residential development, transportation facilities, and utilities are provided in Chapter 5 of the SMMP. Consistency with the specific performance standards is determined through the Shoreline Substantial Development Permit process.

3.5.2 Environmental Impacts

Alternative 1: Preferred Project – 2003 Resort Plan

Jefferson County Comprehensive Plan
Alternative 1 is consistent with Goal LNG 25.0 of the Jefferson County Comprehensive Plan, relating to maintaining the viability of the Port Ludlow MPR. Changed market conditions have resulted in a need to shift the focus of the resort complex from that of a conference facility serving large groups, to a destination resort for the traveling public. The business model for the Resort envisioned in the 1999 Development Agreement is no longer viable. Build-out of the Resort with a new waterfront restaurant, additional indoor recreational facilities for Resort guests, additional lodging opportunities (permanent and/or seasonal), improved parking and circulation in the waterfront area, and expansion of the marina with upgraded support facilities will maintain the Resort function and will be economically sustainable.

With regard to consistency with Policies and Strategies related to Comprehensive Plan Goal 25.0:

- Policy LNG 25.1 - Compliance with critical area regulations related to fish and wildlife habitat was addressed in the 2002 Port Ludlow Marina Expansion SEIS; the proposed expansion was found to be consistent with County regulations. The Marina expansion has also been reviewed by applicable federal agencies (U.S. Army Corps of Engineers, NOAA Fisheries, U.S. Fish and Wildlife Service) and the State Department of Fish and Wildlife and found to be consistent with federal and state regulations related to threatened and endangered fish species and marine habitat. The impacts of upland and infrastructure improvements are addressed in Sections 3.1 - 3.3, and 3.7 of this Draft SEIS.
Policy LNG 25.2 - No urban services will be established outside the MPR as a result of this project.

Policy LNG 25.3 – No new urban or suburban land uses will be established outside the MPR as a result of this project.

Policy LNG 25.4 - The total number of residential units allowed in the MPR (i.e., 2,250) will not be exceeded.

Policy LNG 25.5 - The new residential units will provide increased variety of residential unit types (1,200 – 1,500-square-foot townhomes) within the Resort complex.

Policy LNG 25.6 – The project will not impact efforts to preserve and protect area greenbelts, open spaces, or wildlife corridors.

Policy LNG 25.7 – N/A

Policy LNG 25.8 – N/A

The proposed project is also consistent with the Parks and Recreation Goals and Policies of the Jefferson County Comprehensive Plan, Open Space Element that encourage development and maintenance of park and recreational facilities that are responsive to the needs and interests of Jefferson County residents and visitors. The expansion will relieve existing and potential overburdening of existing recreational areas and facilities.

The proposed recreational facilities will support areas designated for future residential development and adequate infrastructure will be available. The location, type, and amount of park and recreational facilities is consistent with the needs and desires of the citizens in the area and will accommodate a diversity of user groups.

Consistency of the marina expansion with the Jefferson County Comprehensive Plan was also addressed in the Port Ludlow Marina Expansion SEIS.

Shoreline Management Master Program (SMMP)
Regarding Shoreline goals and policies, consistency with the policies and performance standards contained in the Shoreline Management Master Program (SMMP) would result in consistency with the Shoreline goals and policies.

With Alternative 1, proposed new development will be located within the Urban shoreline environment. It is anticipated one shoreline permit will be requested for all regulated development within shoreline jurisdiction (marina and upland), although the actual construction of projects may occur in phases. Consistency with the Urban Policies follows:

Policy 1 – The proposed project adds new uses to the waterfront and expands the existing marina. The relocated restaurant, recreation building, and promenade are considered water-enjoyment uses; the marina and its support services are a water-dependent use. The proposed boardwalk and marina expansion will increase public access to the water.
Policy 2 – The proposed project provides for utilization of property within the Urban designation and does not propose expansion into non-urban areas.

Policy 3 – The proposed project includes a new pedestrian shoreline boardwalk and improved signage for pedestrian access along the shoreline. Visual access to the shoreline will be maintained. The expanded marina will be visible from adjacent residential uses and Oak Bay Road.

Policy 4 – Public views to the water will be maintained from the waterside of shoreline buildings, from outdoor spaces, and from Oak Bay Road. Conceptual elevations of the waterfront buildings are shown in Figure 12B.

Policy 5 – No significant historic buildings currently exist within the Resort complex.

Policy 6 – The existing shoreline will not be disturbed.

Policy 7 – The existing parking facilities to be reconfigured will be located on the upland side of buildings, away from the shoreline.

Policy 8 – The parking areas will include internal and perimeter landscaping.

Policy 9 – The proposed development must be consistent with other adopted plans, programs, and policies.

Consistency of the marina expansion with the SMMP was also addressed in the *Port Ludlow Marina Expansion SEIS*.

Alternative 2: 1993 Resort Plan
Alternative 2 is similar to Alternative 1 in its consistency with goals and policies contained in both the *Jefferson County Comprehensive Plan* and SMMP. With Alternative 2, however, the upland shoreline would contain primarily residential development, rather than a mix of commercial and residential uses. Public views to the water would be maintained.

Alternative 3: 1999 Resort Plan (No Action)
Development of the Resort as described in the 1999 Development Regulations 3 is consistent with the policies contained in *the Jefferson County Comprehensive Plan*, but does not appear to be consistent with the overall goal of maintaining the viability of the MPR. Since the time Alternative 3 was developed in response to the County Comprehensive Plan, the Resort owner has found that market conditions have changed and there is therefore, a need to change the focus of the Resort. Alternative 3 would also be consistent with the SMMP, and would provide for a more intense use of that portion of the shoreline within the Urban environment. Alternative 3 also proposes development within the band of steep slopes along the east side of Oak Bay Road.

Continued development of townhomes within Ludlow Bay Village, but with no revision to the Resort Plan, would result in development which is generally consistent with the *Comprehensive Plan* and *Shoreline Master Program* Policies. It is unclear how this scenario would effect the economic viability of the Resort. This scenario could also result in single-family residential development along the western portion of the shoreline, a designated “Urban” environment.
3.5.3 Mitigating Measures

The permitting process for the expansion will require consistency with the Port Ludlow MPR Ordinance and the Comprehensive Plan and Shoreline Management Master Program goals and policies as well as any other applicable ordinances, such as the Critical Areas Ordinance.

3.5.4 Significant Unavoidable Adverse Impacts

No significant unavoidable adverse impacts are anticipated.
3.6 TRANSPORTATION

The traffic analysis developed for this Draft SEIS (prepared by Geralyn Reinart, PE) includes a review of the existing conditions in the project vicinity and analyzes the potential traffic-related impacts associated with the Preferred Action (Alternative 1), the 1993 Resort Plan (Alternative 2), and the current Resort Plan (Alternative 3 – 1999 Resort Plan/No Action). The type and magnitude of the land use associated with the alternatives is described in more detail under the “Project Description” found in Section 2.2 of this Draft SEIS. It should be noted that it is unlikely that all the facilities proposed under the current Resort Plan (i.e., Alternative 3) could still be built, given the development that has occurred since the 1999 Plan was adopted. For purposes of this traffic study, however, and to provide a comparison between the alternatives, this Alternative is analyzed as described in the current MPR regulations.

The major elements included in this traffic analysis are a description of the existing roadway and traffic conditions, traffic accident history, the trip generation/distribution, level of service (LOS) analysis at critical intersections, and a summary of impacts and expected mitigation. Also included in the analyses are the cumulative impacts associated with external traffic growth and current and future housing construction within Port Ludlow.

Trip generation utilized for the alternatives is based on values from the *ITE Trip Generation Manual* (published by the Institute of Transportation Engineers). Values from the *Trip Generation Manual* are used for all land uses with the exception of the residential development. Past traffic impact analyses in Port Ludlow have used adjusted trip generation values for residential development to account for smaller household sizes. Adjustments to the trip rates were utilized in the preparation of the 1993 *Port Ludlow Development Program Final Environmental Impact Statement (FEIS)* and were described in detail in that document. The above-mentioned yearly traffic-monitoring program provided for Jefferson County also captures count data for use in calculating the trip generation rates for the residential units within Port Ludlow. This trip generation data has been based on the number of occupied units at the time of the counts by using utility records to determine occupancy. (The use of just occupied units in the calculation of trip rates tends to result in a conservative or higher trip rate value than may actually exist based strictly on a per lot basis.) Data collected from the 2002 program is used in the analyses that follow.

Future traffic volumes are estimated for the year 2010, which is the expected year for complete build-out and occupancy of the Resort. The existing traffic volumes are adjusted upwards based on a combination of data provided by Jefferson County from their *Comprehensive Plan* and the traffic generated by the approximately 350 residential units that remain to be constructed under the Port Ludlow Master Plan. Further discussion and details regarding these estimates can be found in Appendix F.
3.6.1 Affected Environment

Existing Roadway and Traffic Conditions

Area roadways that would serve the Port Ludlow Resort include SR 104, SR 19 (Beaver Valley Road), Paradise Bay Road, and Oak Bay Road. Roadways in the project area are shown in Figure 15. The following briefly describes these roadways.

**SR 104** is a predominantly east-west highway that provides access to the Edmonds-Kingston ferry to the east and connects to SR 101 to the west. In the project vicinity the roadway is typically two lanes wide with six- to ten-foot paved shoulders and some extruded curb. Turn storage lanes have been provided at the Paradise Bay Road and Beaver Valley Road intersections, and a hill-climbing lane extends west from Paradise Bay Road for several hundred feet. The posted speed is 60 mph. SR 104 is characterized by gentle horizontal and vertical curves and the adjacent land use is typically undeveloped/rural property. Existing intersections from SR 104 that provide access to Port Ludlow include Paradise Bay Road, Teal Lake Road, and Beaver Valley Road. All of these intersections are controlled by stop signs on the side street.

**SR 19 (Beaver Valley Road)** is a state highway that extends north from SR 104 to Port Townsend. Beaver Valley Road is approximately 24 feet wide with 4- to 7-foot paved shoulders and some extruded curb. The roadway is in good condition and is characterized by gentle horizontal and vertical curvature. A Park & Ride lot and visitor information center are located just north of where Beaver Valley Road intersects SR 104. The posted speed is 50 mph.

**Paradise Bay Road** is a minor collector that provides a connection between SR 104 just west of the Hood Canal Bridge and Oak Bay Road within the Port Ludlow community. The roadway is two lanes wide and is characterized by fairly gentle horizontal and vertical curvature. The posted speed varies from 30 mph to 50 mph, with a 40-mph speed posted within the Port Ludlow community. The roadway is 22 feet wide with shoulders varying from about 1 foot up to 10 feet. (The wider shoulder width is typically located at the intersections serving newer developments.) The roadway is fronted by undeveloped parcels, residential lots, and some commercial development near its intersection with Oak Bay Road.

**Oak Bay Road** is a major collector that provides access from Beaver Valley Road to the Oak Bay/Fort Flagler area to the north, traveling through the Port Ludlow community. The roadway is approximately 20-22 feet wide with shoulders up to 3 feet wide in certain areas and open ditches. The posted speed is 40 mph. An all-way stop controls the intersection of Oak Bay Road/Paradise Bay Road.

The Resort complex itself, including the marina, is accessed directly from Oak Bay Road. Approximately 1,400 linear feet of existing private roads provide internal circulation within the Resort.

**On-going Monitoring Program.** Port Ludlow Associates is required by Jefferson County to provide a yearly traffic-monitoring program for Port Ludlow. The purpose of the monitoring program is to provide a cumulative summary of traffic volumes in the area and an assessment of
XXX - August 2003 weekend average daily volume
(XXX) - 2003 Jefferson County average daily volume
[XXX] - 2002 WSDOT average daily volume
N.A. - not available

Existing Daily Traffic Volumes
current operating conditions at critical intersections in the general area. The Washington State Department of Transportation (WSDOT) has also expressed concern regarding traffic impacts in July and August, particularly on weekends. The Port Ludlow monitoring program has thus focused on weekend counts by taking machine counts on a Saturday, Sunday, and Monday in August. The year 2002 is the ninth year that data has been collected for this program. Data from this program has been used in this traffic analysis. Copies of the annual traffic-monitoring program are on file with Jefferson County.

Transit Service

Transit service in Jefferson County is provided by Jefferson Transit. Port Ludlow is served by the Port Ludlow/Poulsbo/Tri-Area route, which provides service between Port Townsend and Poulsbo via the Tri-Area and Port Ludlow. Service is provided daily, although service is reduced on the weekend. Weekday service begins at approximately 6:00 AM and continues until approximately 7:30 PM, at approximately one and a half to four hour headways. Weekend service is limited to one AM and one PM run in each direction. The Port Ludlow Village Store is listed as a scheduled timepoint along the route.

Non-Motorized Facilities

Some paved pathways have been constructed within the Port Ludlow MPR development; these pathways meander through the residential areas. Sidewalks have been constructed within the most recent subdivisions. A comprehensive community-wide pedestrian trail plan has been approved by Jefferson County and is being constructed in phases. The trail system is intended to serve recreational uses, as well as a network between activity nodes such as the recreation center, marina, and commercial complex. Trails exist within the Resort complex, but are currently unsigned.

Accident Analysis

Traffic accident data was provided by Jefferson County for Oak Bay Road and Paradise Bay Road. The following table summarizes the accident frequency along the roadway sections and at the major intersections for the years 2000, 2001, and 2002.
### Table 3

**Accident History**

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</tr>
<tr>
<td>2001</td>
<td></td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>2002</td>
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<td>2</td>
</tr>
<tr>
<td>at Ludlow Bay Road (MP 1.24)</td>
<td></td>
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<tr>
<td>2000</td>
<td></td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
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</tr>
<tr>
<td>2002</td>
<td></td>
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<td>0</td>
<td>0</td>
</tr>
<tr>
<td>at Teal Lake Road (MP 1.52)</td>
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</tr>
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</tr>
</tbody>
</table>

Injuries were involved in 4 of the 11 collisions (36.41 percent) along roadways in the area, and one fatality (9.1 percent) was reported. The fatality involved a driver having a heart attack whose vehicle left the roadway and rolled over. The majority of the accidents (63.6 percent) involved vehicles either losing control and rolling over or leaving the roadway in a curve section. The remaining collisions included right angle collision, a rear-end collision, and a head-on collision. Overall, the frequency of accidents in the area is low.
Traffic Volumes

Traffic count data has been collected in the Port Ludlow area since 1994 as part of the yearly traffic monitoring program that was required as a condition of approval for several prior plat approvals. The monitoring program collects both weekday and weekend data during the month of August, along with weekday PM peak hour turning movement counts. Counts are conducted during the month of August in order to capture the higher volume tourist traffic that is typically present during the summer months. This data was again collected in 2003. The Washington State Department of Transportation (WSDOT) also conducts traffic counts along the state highways, and Jefferson County counts the County roadways. Summaries of the various daily traffic volumes are shown on Figure 15. In general, the volumes along the state highways were typically higher on the weekend than the average daily volumes, whereas the reverse was true along the County arterials.

The weekday PM peak hour is the highest 60-minute period between the hours of 4:00 and 6:00 PM and typically occurs during the peak afternoon commute. Peak hour counts completed in 2003 available for this study include the intersections of Paradise Bay Road/SR 104, SR 104/Beaver Valley Road, Oak Bay Road/Beaver Valley Road, Paradise Bay Road/Oak Bay Road, Teal Lake Road/Paradise Bay Road, and Oak Bay Road/Walker Way. A summary of these counts can be found on Figure 16.

Figure 17 shows the estimated weekend peak hour volumes for these same intersections. These volumes are based on the approach volumes from the mechanical counters. The weekend peak hour for all of the intersections within Port Ludlow (i.e., Oak Bay Road/Paradise Bay Road, Oak Bay Road/Walker Way, and Paradise Bay Road/Teal Lake Road) occurred on Saturday during the late morning/early afternoon, whereas the intersections along SR 104 or SR 19 peaked on Sunday afternoon. At all locations, the weekend peak hour total approach volumes were higher than the weekday peak hour volumes.

Level of Service

Existing levels of service were calculated for intersections that would be affected by future development and per discussions with Jefferson County Staff. LOS analyses were conducted using the traffic count data described above. Calculations for the intersection LOS analyses completed for this assessment were conducted using the McTrans Highway Capacity Software release 4.1c based on the 2000 Highway Capacity Manual.

“Level of service” is a common term used in the Traffic Engineering profession that is defined as a qualitative measure describing operational conditions within a traffic stream and its perception by motorists and/or passengers. These conditions are usually described in terms of such factors as speed and travel time, freedom to maneuver, traffic interruptions, comfort and convenience, and safety. Six levels of service are designated, ranging from “A” to “F”, with LOS “A” representing the best operating conditions and LOS “F” the worst. Jefferson County considers LOS “C” or better acceptable in areas outside the urban line and LOS “D” or better acceptable in areas within the urban lines and along urban/tourist corridors.
Figure 16 – 2003 Volumes
Port Ludlow Resort Plan DSEIS

2003 PM Peak Hour Volumes
(Weekdays)
Figure 17 – 2003 Volumes
Port Ludlow Resort Plan DSEIS

2003 Estimated Weekend Peak Hour Traffic Volumes
Six intersections were analyzed for this assessment and include the following:

- SR 104/Paradise Bay Road
- SR 104/SR 19 (Beaver Valley Road)
- SR 19/Oak Bay Road
- Oak Bay Road/Paradise Bay Road
- Paradise Bay Road/Teal Lake Road
- Oak Bay Road/Walker Way

All of these intersections operate under minor street stop sign control with the exception of Oak Bay Road/Paradise Bay, which is controlled by stop signs in all directions. The following tables summarize the current levels of service for the weekday and weekend conditions.

### Table 4
**Existing Weekday Levels Of Service**

<table>
<thead>
<tr>
<th></th>
<th>NORTHBOUND</th>
<th>SOUTHBOUND</th>
<th>EASTBOUND</th>
<th>WESTBOUND</th>
<th>OVERALL</th>
</tr>
</thead>
<tbody>
<tr>
<td>SR 104/Paradise Bay Road</td>
<td>LOS C 18.8 sec.</td>
<td>LOS F &gt;100 sec.</td>
<td>LOS A 10.0 sec.</td>
<td>LOS A 8.8 sec.</td>
<td>N.A.</td>
</tr>
<tr>
<td>SR 104/Beaver Valley Road</td>
<td>LOS B 14.0 sec.</td>
<td>LOS D 27.2 sec.</td>
<td>LOS A 9.2 sec.</td>
<td>LOS A 8.0 sec.</td>
<td>N.A.</td>
</tr>
<tr>
<td>Beaver Valley Road/Oak Bay Road</td>
<td>N.A.</td>
<td>LOS A 8.1 sec.</td>
<td>N.A.</td>
<td>LOS B 12.6 sec.</td>
<td>N.A.</td>
</tr>
<tr>
<td>Oak Bay Road/Paradise Bay Road</td>
<td>LOS A 8.6 sec.</td>
<td>LOS A 8.7 sec.</td>
<td>LOS A 8.5 sec.</td>
<td>LOS A 9.7 sec.</td>
<td>LOS A 9.0 sec.</td>
</tr>
<tr>
<td>Paradise Bay Road/Teal Lake Road</td>
<td>LOS B 11.7 sec.</td>
<td>LOS A 9.9 sec.</td>
<td>LOS A 7.6 sec.</td>
<td>LOS A 7.6 sec.</td>
<td>N.A.</td>
</tr>
<tr>
<td>Oak Bay Road/Walker Way</td>
<td>LOS A 7.6 sec.</td>
<td>LOS A 7.6 sec.</td>
<td>LOS B 11.1 sec.</td>
<td>LOS B 11.2 sec.</td>
<td>N.A.</td>
</tr>
</tbody>
</table>

N.A. – not applicable/available (i.e., calculation not provided for specific analysis or movement)

### Table 5
**Existing Weekend Levels Of Service**

<table>
<thead>
<tr>
<th></th>
<th>NORTHBOUND</th>
<th>SOUTHBOUND</th>
<th>EASTBOUND</th>
<th>WESTBOUND</th>
<th>OVERALL</th>
</tr>
</thead>
<tbody>
<tr>
<td>SR 104/Paradise Bay Road</td>
<td>LOS D 29.8 sec.</td>
<td>LOS F &gt;100 sec.</td>
<td>LOS A 8.9 sec.</td>
<td>LOS A 11.4 sec.</td>
<td>N.A.</td>
</tr>
<tr>
<td>SR 104/Beaver Valley Road</td>
<td>N.A.</td>
<td>LOS F &gt;100 sec.</td>
<td>LOS A 10.0 sec.</td>
<td>LOS A 8.6 sec.</td>
<td>N.A.</td>
</tr>
<tr>
<td>Beaver Valley Road/Oak Bay Road</td>
<td>N.A.</td>
<td>LOS A 8.2 sec.</td>
<td>N.A.</td>
<td>LOS B 14.3 sec.</td>
<td>N.A.</td>
</tr>
<tr>
<td>Oak Bay Road/Paradise Bay Road</td>
<td>LOS A 8.8 sec.</td>
<td>LOS A 9.0 sec.</td>
<td>LOS A 8.9 sec.</td>
<td>LOS B 10.1 sec.</td>
<td>LOS A 9.3 sec.</td>
</tr>
<tr>
<td>Paradise Bay Road/Teal Lake Road</td>
<td>LOS B 12.0 sec.</td>
<td>LOS B 10.1 sec.</td>
<td>LOS A 7.5 sec.</td>
<td>LOS A 7.6 sec.</td>
<td>N.A.</td>
</tr>
<tr>
<td>Oak Bay Road/Walker Way</td>
<td>LOS A 7.5 sec.</td>
<td>LOS A 7.7 sec.</td>
<td>LOS B 11.3 sec.</td>
<td>LOS B 11.5 sec.</td>
<td>N.A.</td>
</tr>
</tbody>
</table>

N.A. – not applicable/available (i.e., calculation not provided for specific analysis/movement, or no volume on subject movement)
Tables 4 and 5 show that the intersections along SR 104 are operating at a lower LOS than the intersections located on the County arterial system. The lower LOS for the minor road movements is a result of the high volumes on SR 104 that make it difficult for vehicles to enter from the minor roadway. A comparison of the results of the analyses from the prior monitoring programs shows minor changes in the amount of delay at the intersections of Teal Lake Road/Paradise Bay Road, Oak Bay Road/Beaver Valley Road, and Paradise Bay Road/Oak Bay Road since 1992.

In general, both of the intersections along SR 104 have shown increased intersection delay over the past decade due to increased demand for the southbound left-turn movements and higher through volumes on SR 104. The LOS for the southbound movement at the intersection of SR 104/Paradise Bay Road was at LOS “F” in 2003. This movement has ranged from “C” to “F” since 1992.

The comparison of the 2003 weekend data with the weekday data was similar to most of the prior years when both the intersection of Paradise Bay Road/SR 104 and Beaver Valley Road/SR 104 operated at a worse condition on the weekend than the weekday.

**Resort Parking**

Off-street parking is currently provided throughout the Resort area. Within the Admiralty area, the conference center provides parking for 54 vehicles. Parking for the Admiralty I and II condominium units and the Beach Club is provided.

Within Ludlow Bay Village, 36 stalls are currently available at the Heron Beach Inn; additional stalls are located in the upper and lower parking lots north of the marina. On-site parking for the residential townhomes is provided at a rate of one to two stalls per unit. Much of the available existing parking is located north of Heron Road and tends not to be used except during peak season. Parking along the side of roads adjacent to the marina also occurs during the peak season.

---

<table>
<thead>
<tr>
<th>LOS</th>
<th>Delay</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>(&lt; 10) seconds</td>
</tr>
<tr>
<td>B</td>
<td>(&gt; 10 &amp; \leq 15) seconds</td>
</tr>
<tr>
<td>C</td>
<td>(&gt; 15 &amp; \leq 25) seconds</td>
</tr>
<tr>
<td>D</td>
<td>(&gt; 25 &amp; \leq 35) seconds</td>
</tr>
<tr>
<td>E</td>
<td>(&gt; 35 &amp; \leq 50) seconds</td>
</tr>
<tr>
<td>F</td>
<td>(&gt; 50) seconds</td>
</tr>
</tbody>
</table>

(for unsignalized intersections)
3.6.2 Environmental Impacts

Short-Term, Construction Impacts (all Alternatives)

Development under all Alternatives will generate the customary temporary construction traffic. Typically, the majority of these activities occur during the daylight hours on the weekdays, thus limiting the impact on the adjacent roadways. Large vehicles used in grading or deliveries will travel to and from the site until the facilities are complete. Some of the larger equipment will be brought in once and remain on site until it is no longer needed. For all Alternatives, assuming a total work force of 40 to 50 during the various phases of construction, plus a total of 30 deliveries on any given day, a total of 220 to 260 construction trips per day may occur. This amount is less than the traffic that would be generated by the development upon completion.

Long-Term Impacts

For all Alternatives, several project elements are included in the Resort Plan. These elements include both existing uses such as the Heron Beach Inn, the Harbor Master Restaurant, the marina, and the existing residential units, as well as new (proposed) uses. Those uses that currently generate traffic are included in the existing traffic volumes. Those uses that will generate new traffic are included in the analysis of future traffic volumes.

Alternative 1: Preferred Action - 2003 Resort Plan

The following sections summarize the traffic-related impacts associated with build-out of the remainder of the Port Ludlow Resort under the Proposed Action (Alternative 1). One of these uses, the Harbor Master Restaurant, will be relocated from its current site to a site closer to the water and the seating capacity will be decreased by 25 percent, which is likely to result in less traffic. To provide a conservative analysis, however, no deduction of current traffic has been made to coincide with this seating reduction.

Those development actions that will generate new traffic and are included in the projection of future traffic volumes include: an additional 101 residential units, the 100 additional slips at the marina, the 2,900-square-foot maintenance building, and the PLA offices that will be relocated to the existing conference center building. All other uses described under the Proposed Action are either existing uses or support facilities that are not traffic generators by themselves. (Note: many of the trips associated with the relocation of the PLA offices to the resort currently exist on the roadways. However, for purposes of the following analyses, these trips will be assumed new to the adjacent intersections of Oak Bay Road/Walker Way and Oak Bay Road/Paradise. Beyond these intersections, the employee trips would be included in the existing traffic volumes.)

In addition, the analyses completed for the Proposed Action reviews peak weekend conditions. The peak intersection volumes in the area occur on the weekend rather than on a weekday as is typical in most urban areas where commuter traffic produces higher volumes. Trip generation rates for a Saturday are used, since this is the day when the higher volumes within Port Ludlow are present. The peak hour for both the various land uses and the adjacent intersections are assumed to occur simultaneously in order to review the worst-case condition.
Direct Impacts

Trip Generation
Alternative 1 will generate additional traffic onto the adjacent transportation system. The trip generation for the proposed action was estimated using the most recent values in the *ITE Trip Generation Manual* (6th Edition, 1997) and trip generation data collected as part of the traffic-monitoring program in Port Ludlow. The average trip rates have been used for the trip generation unless noted otherwise. As noted earlier, only those uses that will generate new traffic are included in the trip generation. Land Use Codes 150 (Warehouse), 420 (Marina), and 710 (General Office Building) from the *ITE Trip Generation Manual* for the maintenance building, additional slips, and PLA offices respectively were used in the trip generation estimates. The trip rates for the residential units are based on data collected in the 2002 monitoring program. Table 6 summarizes the weekend trip generation associated with the proposed action.

### Table 6
Estimated Weekend Trip Generation
Alternative 1 (Proposed Action)
Port Ludlow Resort

<table>
<thead>
<tr>
<th>PROPOSED ACTION</th>
<th>Townhomes (101 units)</th>
<th>Marina (100 slips)</th>
<th>PLA Offices (30 emp.)</th>
<th>Maintenance Building (2,900 SF)</th>
<th>Total Trips</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daily Trip Rate</td>
<td>5.40 trips/unit</td>
<td>3.22 trips/slip</td>
<td>0.54 trips/employee</td>
<td>1.22 trips/1,000 SF</td>
<td></td>
</tr>
<tr>
<td>Daily Trips</td>
<td>545</td>
<td>322</td>
<td>16</td>
<td>4</td>
<td>887</td>
</tr>
<tr>
<td>Peak Hour Rate</td>
<td>0.66 trips/unit</td>
<td>0.27 trips/slip</td>
<td>0.09 trips/employee</td>
<td>0.12 trips/1,000 SF</td>
<td></td>
</tr>
<tr>
<td>Peak Trips Entering</td>
<td>36</td>
<td>12</td>
<td>2</td>
<td>0</td>
<td>50</td>
</tr>
<tr>
<td>Peak Trips Exiting</td>
<td>31</td>
<td>15</td>
<td>1</td>
<td>0</td>
<td>47</td>
</tr>
<tr>
<td>Total Peak Trips</td>
<td>67</td>
<td>27</td>
<td>3</td>
<td>0</td>
<td>97</td>
</tr>
</tbody>
</table>

Table 6 shows that the townhomes will generate the majority of the new weekend trips.

Trip Distribution
The distribution of traffic is based on current travel patterns, a review of the existing roadway system and activity centers, and the proposed land uses. Figure 18 shows the estimated weekend daily and peak hour trip distribution/assignment for the proposed action. Many of the trips associated with the Proposed Action will be destined to and from other activities/areas within Port Ludlow, i.e., the commercial area, the community center, golf course, other housing areas, and could include social trips within the community. Reasons for traveling beyond the Port Ludlow community include major shopping, medical/health care, or social/recreational opportunities. Some of the trips would require traveling on SR 104 to reach the ultimate destination, with many trips using Oak Bay Road or Beaver Valley Road to access the Tri-Area or Port Townsend areas. Many of the trips are expected to stay within the Port Ludlow.
Estimated Weekend Trip Distribution/Assignment
(Proposed Action – Alternative 1)
community. The proposed action would have its greatest traffic-related impact on Oak Bay Road, which provides direct access to the Resort.

**Future Volumes**

Figure 19 shows the estimated 2010 weekend daily and peak hour traffic volumes for the Proposed Action. The trips associated with development under the proposed action were then added into the 2010 base volumes (see description and base volumes in Appendix F) to produce the volumes shown on Figure 19.

**Level of Service**

LOS analyses were completed for the 2010 Proposed Action conditions (including anticipated increases in base volumes) and are shown in Table 7.

<table>
<thead>
<tr>
<th>Table 7</th>
<th>2010 Weekend Levels Of Service</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PROPOSED ACTION</strong></td>
<td><strong>NORTHBOUND</strong></td>
</tr>
<tr>
<td>SR 104/Paradise Bay Road</td>
<td>LOS F &gt;100 sec.</td>
</tr>
<tr>
<td>SR 104/Beaver Valley Road</td>
<td>N.A.</td>
</tr>
<tr>
<td>Beaver Valley Road/Oak Bay Road</td>
<td>N.A.</td>
</tr>
<tr>
<td>Oak Bay Road/Paradise Bay Road</td>
<td>LOS B 11.5 sec.</td>
</tr>
<tr>
<td>Paradise Bay Road/Teal Lake Road</td>
<td>LOS C 18.6 sec.</td>
</tr>
<tr>
<td>Oak Bay Road/Walker Way</td>
<td>LOS A 7.7 sec.</td>
</tr>
</tbody>
</table>

N.A. – not applicable/available (i.e., calculation not provided for specific analysis/movement, or no volume on subject movement)

Where:

<table>
<thead>
<tr>
<th>LOS</th>
<th>Delay</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>\leq 10 seconds</td>
</tr>
<tr>
<td>B</td>
<td>&gt; 10 &amp; \leq 15 seconds</td>
</tr>
<tr>
<td>C</td>
<td>&gt; 15 &amp; \leq 25 seconds</td>
</tr>
<tr>
<td>D</td>
<td>&gt; 25 &amp; \leq 35 seconds</td>
</tr>
<tr>
<td>E</td>
<td>&gt; 35 &amp; \leq 50 seconds</td>
</tr>
<tr>
<td>F</td>
<td>&gt; 50 seconds</td>
</tr>
</tbody>
</table>

(for unsignalized intersections)

The results of the capacity analyses for the future conditions under the proposed action indicate that all of the intersections will drop from their current levels of service. Much of the increase in delay, especially at the two intersections along SR 104, is a result of the increase in traffic over the next seven years associated with miscellaneous background growth (see discussion in Appendix F). The local intersections (i.e., Teal Lake Road/Paradise Bay Road, Oak Bay
2010 Estimated Weekend Daily & Peak Hour Traffic Volumes
(Proposed Action – Alternative 1)
Road/Walker Way, and Paradise Bay Road/Oak Bay Road) will continue to operate at good levels of service as would the Beaver Valley Road/Oak Bay Road intersection. However, the side-street movements at the intersections along SR 104 would experience considerable delay. (The side-street movements at both of these intersections currently experience LOS “F” on the weekend.) The traffic-related impacts associated with the proposed action have a very limited impact on the critical movements at the intersections reviewed.

Transit Service
Proposed development would create additional housing and recreational opportunities. As discussed in the “Affected Environment” section, transit service is currently provided by Jefferson Transit between Port Townsend and Poulsbo via the Tri-Area and Port Ludlow. Service is provided daily, although service is reduced on the weekend. Development under the Proposed Action is not sufficient to warrant additional transit service.

Non-Motorized Facilities
The Proposed Action will likely generate additional pedestrian activity along the adjacent roadways that could potentially conflict with vehicular traffic. A designated trail has been shown on the site plan to serve Resort visitors and residents and is a portion of the pathway system in Port Ludlow. Specifically, the portion of the trail system constructed under the Proposed Action includes an eight-foot-wide boardwalk/esplanade along the shoreline extending from the new Harbor Master Restaurant to Burner Point. Signage for the existing pedestrian trail system will be located at the upper community parking lot and along the Burner Point beach trail.

A comprehensive community-wide pedestrian trail system has been constructed within Port Ludlow and is maintained as a joint effort between the Port Ludlow Village Council and the developer. The trail system is intended to serve recreational uses, as well as provide a network between the residential areas and activity nodes such as the recreation center, marina, and commercial complex.

Site Access
The Oak Bay Road/Walker Way/Marina View Drive intersection will continue to serve as the main access to the Resort, with Harbor Drive continuing as a one-way entry to the Marina area.

The analyses completed in the prior section indicate that the Oak Bay Road/Walker Way intersection is currently operating at LOS “B”, with the future (2010) LOS upon completion of the Resort projected at LOS “C”, which is considered acceptable. The accident history showed no reported collisions at this intersection during the three-year period reviewed.

No left-turn lanes are currently constructed along Oak Bay Road to serve traffic entering the Resort. The need for left-turn storage on Oak Bay Road at Marina View Drive has been evaluated using Figure 910-9a of the WSDOT Design Manual. Based on the anticipated volumes at this intersection and Figure 910-9a, a left-turn storage lane would not be recommended for the future conditions.

The entering and stopping sight distances along Oak Bay Road for the Marina View Drive access were reviewed. A horizontal curve is located to the south of Marina View Drive along with a
sight upgrade. The grade and alignment to the north is relatively flat and straight. The entering sight distance is approximately 850 feet to the north, as is the stopping sight distance from the north. The entering sight distance to the south is restricted by the horizontal curve and measures approximately 525 to 550 feet. The stopping sight distance from the south is approximately 425 to 450 feet.

The posted speed along Oak Bay Road is 40 mph. The required entering sight distance for a 40-mph design speed is 445 feet and 500 feet for a 45-mph design speed according to the AASHTO 2001 edition of *A Policy on Geometric Design of Highways and Streets*. The required stopping sight distance for a 40-mph design speed is 305 feet and 360 feet for a 45-mph design speed. Based on AASHTO guidelines, the intersection meets both entering and stopping sight distance requirements for the posted speed and a design speed of 45 mph.

**Parking**

Additional parking will be constructed as part of the development. Parking requirements for the various commercial uses (the marina and restaurant comprising the larger requirements) will be provided per county Code and will total 237 stalls. An additional 95 parking stalls will be provided to serve as overflow for the townhome guests or visitors using the open space. Altogether, 332 spaces will be provided in lots north of the restaurant and marina or on the north side of Heron Drive.

During peak season, Resort employees will be required to use the upper lots. The parking supply will be monitored during the peak season and valet service will be provided by the restaurant if needed. Golf carts may also be available for marina users to shuttle supplies and equipment between the upper parking lots to and from the marina.

Parking for “special events,” such as Ludlow Days or large conferences/weddings, which have resulted in capacity conditions in the summer, will no longer be required. Consequently, many of the past problems with parking demand will be eliminated.

Furthermore, the parking lot layout and access for the Heron Beach Inn will be modified to eliminate conflicts with townhome residents across from the Inn and along Heron Drive. Nineteen additional stalls will be provided within the Inn parking lot and access to the Inn will be restricted to Gull Drive.

**Traffic Impacts**

Resort development under Alternative 1 would generate just under 900 new weekend daily trips, with just under 100 of those trips occurring during the peak hour. The roadways within the Port Ludlow community will be impacted by the largest number of trips. However, the County roads within Port Ludlow are relatively low volume, and the additional traffic generated by the proposed action is well within the capacity of these roadways. The highest anticipated future volume on either Paradise Bay Road or on Oak Bay Road is less than 6,000 vehicles per day including background traffic growth and new trips from the approved, but unbuilt units. Many of the trips associated with the Proposed Action will be internal to Port Ludlow and will not impact roadways on the regional system.
The major County intersections that will be impacted by the development (i.e., Paradise Bay Road/Teal Lake Road, Paradise Bay Road/Oak Bay Road, and Oak Bay Road/Walker Way) are expected to continue to operate at good levels of service with or without the development. As noted earlier, the capacity analyses have indicated that the intersections of the local arterials will operate at LOS “C” or better.

The most critical transportation conditions in the area occur along SR 104 between Beaver Valley Road and the Hood Canal Bridge. The side-street movements at the intersections of SR 104/Beaver Valley Road and SR 104/Paradise Bay Road are currently at LOS “F” on the weekends during the peak hour and will continue to experience considerable delays. These conditions have been present for several years and were noted in prior traffic monitoring programs conducted for Port Ludlow and identified in prior environmental assessments. The failing conditions are a result of the extremely high volumes of traffic present along SR 104, especially on the weekends in the summer months, and the limited number of gaps in traffic for vehicles entering the highway, which in turn results in a low LOS. The additional trips from the Proposed Action through either of these intersections have minimal impact and comprise less than a fraction of a percentage of traffic through either of these intersections. The Proposed Action will contribute 0.6 percent of trips through the SR 104/Beaver Valley Road intersection and 0.5 percent of the trips to the SR 104/Paradise Bay Road intersection.

**Cumulative Impacts**

The traffic volumes and LOS analyses described under Alternative 1 include estimates of future traffic growth for the year 2010. An annual growth rate ranging from 2.68 percent to 6.09 percent plus pipeline development trips were used to project these volumes to account for background traffic growth in the area and the cumulative effects of this growth. Details and summaries of the future volumes and analyses can be found in Appendix F.

**Alternative 2: 1993 Resort Plan**

The subsequent sections summarize the traffic-related impacts associated with development of the Resort as described in the 1993 programmatic EIS for Port Ludlow. Many of the land use elements in Alternative 2 are similar to those under the Proposed Action and include the existing uses such as the Heron Beach Inn, the Harbor Master Restaurant, the marina, and the existing residential units. The traffic generated by these existing uses is included in the existing traffic volumes.

As noted under Alternative 1, only those development actions that will generate new traffic are included in the analysis for Alternative 2. These uses include the additional 97 residential units (the 186 units proposed in 1993 less the existing condominiums in Admiralty I and II and townhomes in Ludlow Bay Village), the 100 additional slips at the marina, the 2,500-square-foot retail building, and the 1,850-square-foot Town Hall. All other uses described under Alternative 2 are either existing uses or support facilities that are not traffic generators by themselves. The analyses for Alternative 2 will review peak weekend conditions as noted under the Proposed Action. The peak hour for both the various land uses and the adjacent intersections are assumed to occur simultaneously as noted under the Proposed Action.
Direct Impacts

Trip Generation
Alternative 2 will generate additional traffic onto the adjacent transportation system. The trip generation for Alternative 2 has been estimated using the most recent values in the ITE Trip Generation Manual (6th Edition, 1997) and trip generation data collected as part of the traffic monitoring program in Port Ludlow. The average trip rates have been used for the trip generation unless noted otherwise. As noted earlier, only those uses that will generate new traffic are included in the trip generation. Land Use Codes 420 (Marina), 495 (Recreational Center), and 814 (Specialty Retail Center) from the ITE Trip Generation Manual for additional slips, the Town Hall, and retail building respectively were used in the trip generation estimates. The trips rates for the residential units are from the 2002 monitoring program. Table 8 summarizes the weekend trip generation associated with Alternative 2.

Table 8
Estimated Weekend Trip Generation
Alternative 2
Port Ludlow Resort

<table>
<thead>
<tr>
<th>ALTERNATIVE 2</th>
<th>Townhomes (97 units)</th>
<th>Marina (100 slips)</th>
<th>Town Hall (1,850 SF)</th>
<th>Specialty Retail (2,500 SF)</th>
<th>Total Trips</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daily Trip Rate</td>
<td>5.40 trips/unit</td>
<td>3.22 trips/slip</td>
<td>9.10 trips/1,000 SF</td>
<td>42.04 trips/1,000 SF</td>
<td>968</td>
</tr>
<tr>
<td>Daily Trips</td>
<td>524</td>
<td>322</td>
<td>17</td>
<td>105</td>
<td></td>
</tr>
<tr>
<td>Peak Hour Rate</td>
<td>0.66 trips/unit</td>
<td>0.27 trips/slip</td>
<td>1.25 trips/1,000 SF*</td>
<td>4.93 trips/1,000 SF*</td>
<td></td>
</tr>
<tr>
<td>Peak Trips Entering</td>
<td>35</td>
<td>12</td>
<td>1</td>
<td>7</td>
<td>55</td>
</tr>
<tr>
<td>Peak Trips Exiting</td>
<td>29</td>
<td>15</td>
<td>1</td>
<td>5</td>
<td>50</td>
</tr>
<tr>
<td>Total Peak Trips</td>
<td>64</td>
<td>27</td>
<td>2</td>
<td>12</td>
<td>105</td>
</tr>
</tbody>
</table>

* - Saturday peak hour rate not available in ITE so weekday value was used.

Table 8 shows that Alternative 2 would generate slightly more traffic than the Alternative 1 at build-out.

Trip Distribution
Figure 20 shows the estimated weekend daily and peak hour trip distribution/assignment for Alternative 2. The distribution/assignment is based on current traffic patterns, the existing road system, and the proposed land uses as discussed under the Proposed Action. As noted under Alternative 1, many of the trips are expected to stay within the Port Ludlow community, and the greatest traffic-related impacts will be on Oak Bay Road.

Future Volumes
Figure 21 shows the estimated 2010 weekend daily and peak hour traffic volumes for Alternative 2. The annual growth rates and pipeline traffic discussed in the Appendix were used to project the
Estimated Weekend Trip Distribution/Assignment
(Alternative 2)

XXX% - Percent Distribution
(XXX) - Peak hour volume
[XXX] - Daily volume
2010 Estimated Weekend Daily & Peak Hour Traffic Volumes
(Alternative 2)
future base volumes shown in Figure 21 to account for miscellaneous background and pipeline traffic growth. Additionally, the traffic associated with development under Alternative 2 was added into these volumes.

**Level of Service**
LOS analyses were completed for the 2010 Alternative 2 conditions and are shown in Table 9.

**Table 9**

<table>
<thead>
<tr>
<th>ALTERNATIVE 2</th>
<th>NORTHBOUND</th>
<th>SOUTHBOUND</th>
<th>EASTBOUND</th>
<th>WESTBOUND</th>
<th>OVERALL</th>
</tr>
</thead>
<tbody>
<tr>
<td>SR 104/Paradise Bay Road</td>
<td>LOS F &gt;100 sec.</td>
<td>LOS F &gt;100 sec.</td>
<td>LOS B 10.2 sec.</td>
<td>LOS C 16.8 sec.</td>
<td>N.A.</td>
</tr>
<tr>
<td>SR 104/Beaver Valley Road</td>
<td>N.A.</td>
<td>LOS F &gt;100 sec.</td>
<td>LOS B 12.8 sec.</td>
<td>LOS A 9.1 sec.</td>
<td>N.A.</td>
</tr>
<tr>
<td>Beaver Valley Road/Oak Bay Road</td>
<td>N.A.</td>
<td>LOS A 8.6 sec.</td>
<td>N.A.</td>
<td>LOS C 20.2 sec.</td>
<td>N.A.</td>
</tr>
<tr>
<td>Oak Bay Road/Paradise Bay Road</td>
<td>LOS B 11.6 sec.</td>
<td>LOS B 10.6 sec.</td>
<td>LOS B 11.0 sec.</td>
<td>LOS B 14.0 sec.</td>
<td>LOS B 12.3 sec.</td>
</tr>
<tr>
<td>Paradise Bay Road/Teal Lake Road</td>
<td>LOS C 18.7 sec.</td>
<td>LOS B 11.0 sec.</td>
<td>LOS A 7.6 sec.</td>
<td>LOS A 7.9 sec.</td>
<td>N.A.</td>
</tr>
<tr>
<td>Oak Bay Road/Walker Way</td>
<td>LOS A 7.7 sec.</td>
<td>LOS A 8.0 sec.</td>
<td>LOS B 14.3 sec.</td>
<td>LOS C 17.2 sec.</td>
<td>N.A.</td>
</tr>
</tbody>
</table>

N.A. – not applicable/available (i.e., calculation not provided for specific analysis/movement, or no volume on subject movement)

Where:

<table>
<thead>
<tr>
<th>LOS</th>
<th>Delay</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>&lt; 10 seconds</td>
</tr>
<tr>
<td>B</td>
<td>&gt; 10 &amp; ≤ 15 seconds</td>
</tr>
<tr>
<td>C</td>
<td>&gt; 15 &amp; ≤ 25 seconds</td>
</tr>
<tr>
<td>D</td>
<td>&gt; 25 &amp; &lt; 35 seconds</td>
</tr>
<tr>
<td>E</td>
<td>&gt; 35 &amp; &lt; 50 seconds</td>
</tr>
<tr>
<td>F</td>
<td>&gt; 50 seconds</td>
</tr>
</tbody>
</table>

(for unsignalized intersections)

The LOS analyses show that that Alternative 2 will have a slightly greater impact than the Proposed Action at some of the intersections. As noted under the Proposed Action, the local intersections (i.e., Teal Lake Road/Paradise Bay Road, Oak Bay Road/Walker Way, and Paradise Bay Road/Oak Bay Road) will continue to operate at good levels of service as would the Beaver Valley Road/Oak Bay Road intersection. However, the side-street movements at the intersections along SR 104 would experience considerable delay.
**Transit Service**

Development under Alternative 2 will be similar to the Proposed Action. As discussed in the “Affected Environment” section, transit service is currently provided by Jefferson Transit between Port Townsend and Poulsbo via the Tri-Area and Port Ludlow. Service is provided daily, although service is reduced on the weekend. Similar to the proposed action, development under Alternative 2 is not sufficient to warrant additional transit service.

**Non-Motorized Facilities**

Alternative 2 would likely generate additional pedestrian activity along the adjacent roadways as noted under the proposed action. No specific trail or non-motorized facility improvements are noted for construction under Alternative 2. The existing Port Ludlow trail system could serve many of the needs of the new residents.

**Site Access**

Access to the Resort under Alternative 2 would be the same as under Alternative 1, i.e., either from the intersection of Oak Bay Road/Walker Way/Marina View Drive or via Harbor Drive.

The LOS at the intersection of Oak Bay Road/Walker Way/Marina View Drive would be “C”, left-turn storage on Oak Bay Road at Marina View Drive would not be needed, and the sight distance conditions would all be the same as those noted under the Alternative 1.

**Parking**

Slightly more parking would be provided under Alternative 2 as compared to the Proposed Action. Parking for 400 vehicles was proposed under Alternative 2 in various lots throughout the site. The parking lot layout and access for the Heron Beach Inn and adjacent townhomes would remain in its current configuration, however.

As with Alternative 1, it is assumed the past “special events,” generating demands for additional parking during the peak season, would no longer occur.

**Traffic Impacts**

The development of the Port Ludlow Resort under Alternative 2 would generate just under 970 additional weekend daily trips, with 105 of those trips occurring during the peak hour. The impacts associated with development under Alternative 2 would be almost identical to those under the Alternative 1, i.e., the major County intersections would continue to operate at good levels of service (“C” or better) and the side street movements at the intersections of SR 104/Beaver Valley Road and SR 104/Paradise Bay Road would experience considerable delays.

**Cumulative Impacts**

The traffic volumes and LOS analyses described in Alternative 2 include estimates of future traffic growth for the year 2010. An annual growth rate ranging from 2.68 percent to 6.09 percent plus pipeline development trips were used to project these volumes to account for background traffic growth in the area and the cumulative effects of this growth. Details and summaries of the future volumes and analyses can be found in the Appendix.
Alternative 3 – 1999 Resort Plan (No-Action)

The subsequent sections summarize the traffic-related impacts associated with development under the existing 1999 Resort Plan for Port Ludlow (No-Action alternative). Many of the land use elements in Alternative 3 are substantially different to those under the Proposed Action or Alternative 2; however, Alternative 3 does include the existing uses such as the Inn at Port Ludlow, the Harbor Master Restaurant, the marina, and the existing residential units, which currently generate traffic that is included in the existing traffic volumes.

As noted for the previous alternatives, only those development actions that will generate new traffic are included in the analysis for Alternative 3. These uses include the hotel/conference center (including the restaurants and lounge), the 100 additional slips at the marina, the 2,500-square-foot retail building, the museum, and the sports/youth facilities. All other uses described under Alternative 3 are either existing uses or support facilities that are not traffic generators by themselves. The analyses for Alternative 3 will review peak weekend conditions as noted in the previous alternatives. The peak hour for both the various land uses and the adjacent intersections are assumed to occur simultaneously as previously noted.

Direct Impacts

Trip Generation
Alternative 3 will generate additional traffic onto the adjacent transportation system. The trip generation for Alternative 3 has again been estimated using the most recent values in the ITE Trip Generation Manual (6th Edition, 1997). The average trip rates have been used for the trip generation unless noted otherwise. As noted earlier, only those uses that will generate new traffic are included in the trip generation. Land Use Codes 310 (Hotel), 420 (Marina), 492 (Racquet Club), and 814 (Specialty Retail Center) from the ITE Trip Generation Manual were used in the trip generation estimates. No trip generation data is available for museums, so other land uses were reviewed to find a reasonable substitute. The most comparable use of the ones available in the Trip Generation Manual is Land Use Code 590 (Library). The library land use was deemed the most appropriate substitute since its patrons have random arrivals and departures, the use is institutional, and extended stays can occur, all of which are similar to a museum.

Some of the site traffic is expected to be internal, i.e., patrons of the hotel/conference center may use the museum, marina or sports facilities, or current townhome/condominium residents may use the marina, restaurants, or sports facilities located within the site. This assumption is further supported by data found in the ITE Trip Generation Handbook summary on multi-use developments where data for multi-use sites with hotels had an internal capture rate of approximately 30 percent. To be conservative, a 15 percent internal rate for trips within the site has been used for Alternative 3. Since these trips are internal, they will not impact the adjacent roadways or intersections and therefore have been deducted from the total trips associated with the proposed land uses.

Table 10 summarizes the weekend trip generation associated with Alternative 3.
Table 10
Estimated Weekend Trip Generation
Alternative 3
Port Ludlow Resort

<table>
<thead>
<tr>
<th>ALTERNATIVE 3</th>
<th>Hotel/Conf. Center (238 rooms)</th>
<th>Marina (100 slips)</th>
<th>Sport/Youth Centers (43,500 SF)</th>
<th>Specialty Retail (2,500 SF)</th>
<th>Museum (7,500 SF)</th>
<th>Total Trips</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daily Trip Rate</td>
<td>8.19 trips/room</td>
<td>3.22 trips/slip</td>
<td>24.51 trips/1,000 SF</td>
<td>42.04 trips/1,000 SF</td>
<td>46.55 trips/1,000 SF</td>
<td>3,791</td>
</tr>
<tr>
<td>Daily Trips</td>
<td>1949</td>
<td>322</td>
<td>1066</td>
<td>105</td>
<td>349</td>
<td>146</td>
</tr>
<tr>
<td>Less 15% Internal</td>
<td>293</td>
<td>48</td>
<td>160</td>
<td>16</td>
<td>52</td>
<td>27</td>
</tr>
<tr>
<td>Net New Trips</td>
<td>1656</td>
<td>274</td>
<td>906</td>
<td>89</td>
<td>297</td>
<td>3,222</td>
</tr>
<tr>
<td>Peak Hour Rate</td>
<td>0.72 trips/room</td>
<td>0.27 trips/slip</td>
<td>3.11 trips/1,000 SF*</td>
<td>4.93 trips/1,000 SF*</td>
<td>6.75 trips/1,000 SF</td>
<td>209</td>
</tr>
<tr>
<td>Peak Trips Entering</td>
<td>96</td>
<td>12</td>
<td>67**</td>
<td>7</td>
<td>27</td>
<td>20</td>
</tr>
<tr>
<td>Peak Trips Exiting</td>
<td>75</td>
<td>15</td>
<td>68**</td>
<td>5</td>
<td>24</td>
<td>187</td>
</tr>
<tr>
<td>Total Peak Trips</td>
<td>171</td>
<td>27</td>
<td>135</td>
<td>12</td>
<td>51</td>
<td>396</td>
</tr>
<tr>
<td>Less 15% Internal</td>
<td>25</td>
<td>4</td>
<td>20</td>
<td>2</td>
<td>8</td>
<td>59</td>
</tr>
<tr>
<td>Net New Trips</td>
<td>146</td>
<td>23</td>
<td>115</td>
<td>10</td>
<td>43</td>
<td>337</td>
</tr>
</tbody>
</table>

* - Saturday peak hour rate not available in ITE so weekday value was used.
** - Directional split not provided; 50/50 split assumed.

Table 10 shows that Alternative 3 would generate significantly more traffic than the Proposed Action or Alternative 2.

Trip Distribution
Figure 22 shows the estimated weekend daily and peak hour trip distribution/assignment for Alternative 3. The distribution/assignment is more heavily weighted towards SR 104 (to and from the east) than the Proposed Action and Alternative 2. This is due to the regional attraction associated with the hotel/conference center, which is not proposed to the same extent in either the Proposed Action or Alternative 2. As noted under Alternatives 1 and 2, some of trips are expected to stay within the Port Ludlow community with destinations to and from existing residential, commercial, or recreational activities within the community. The greatest traffic-related impacts would continue to be on Oak Bay Road.

Future Volumes
Figure 23 shows the estimated 2010 weekend daily and peak hour traffic volumes for Alternative 3. The annual growth rates and pipeline traffic discussed in the Appendix were used to project the future base volumes shown in Figure 23 to account for miscellaneous background and pipeline traffic growth. Additionally, the traffic associated with development under Alternative 3 was added into these volumes.

Level of Service
LOS analyses were completed for the 2010 Alternative 3 conditions and are shown in Table 11.
Estimated Weekend Trip Distribution/Assignment
(Alternative 3)
Figure 23 – Alt3 2010 Volumes
Port Ludlow Resort Plan DSEIS

2010 Estimated Weekend Daily & Peak Hour Traffic Volumes
(Alternative 3)
Table 11
2010 Weekend Levels Of Service

<table>
<thead>
<tr>
<th>ALTERNATIVE 3</th>
<th>NORTHBOUND</th>
<th>SOUTHBOUND</th>
<th>EASTBOUND</th>
<th>WESTBOUND</th>
<th>OVERALL</th>
</tr>
</thead>
<tbody>
<tr>
<td>SR 104/Paradise Bay Road</td>
<td>LOS F &gt;100 sec.</td>
<td>LOS F &gt;100 sec.</td>
<td>LOS B 10.5 sec.</td>
<td>LOS C 17.3 sec.</td>
<td>N.A.</td>
</tr>
<tr>
<td>SR 104/Beaver Valley Road</td>
<td>N.A.</td>
<td>LOS F &gt;100 sec.</td>
<td>LOS B 13.5 sec.</td>
<td>LOS A 9.1 sec.</td>
<td>N.A.</td>
</tr>
<tr>
<td>Beaver Valley Road/Oak Bay Road</td>
<td>N.A.</td>
<td>LOS A 8.9 sec.</td>
<td>N.A.</td>
<td>LOS E 40.5 sec.</td>
<td>N.A.</td>
</tr>
<tr>
<td>Oak Bay Road/Paradise Bay Road</td>
<td>LOS B 14.0 sec.</td>
<td>LOS B 11.7 sec.</td>
<td>LOS C 15.1 sec.</td>
<td>LOS C 16.2 sec.</td>
<td>LOS B 14.9 sec.</td>
</tr>
<tr>
<td>Paradise Bay Road/Teal Lake Road</td>
<td>LOS C 20.5 sec.</td>
<td>LOS B 11.1 sec.</td>
<td>LOS A 7.6 sec.</td>
<td>LOS A 8.0 sec.</td>
<td>N.A.</td>
</tr>
<tr>
<td>Oak Bay Road/Walker Way</td>
<td>LOS A 7.7 sec.</td>
<td>LOS A 8.3 sec.</td>
<td>LOS C 16.0 sec.</td>
<td>LOS E 38.1 sec.</td>
<td>N.A.</td>
</tr>
</tbody>
</table>

N.A. – not applicable/available (i.e., calculation not provided for specific analysis/movement, or no volume on subject movement)

Where:

<table>
<thead>
<tr>
<th>LOS</th>
<th>Delay</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>&lt; 10 seconds</td>
</tr>
<tr>
<td>B</td>
<td>&gt; 10 &amp; &lt; 15 seconds</td>
</tr>
<tr>
<td>C</td>
<td>&gt; 15 &amp; &lt; 25 seconds</td>
</tr>
<tr>
<td>D</td>
<td>&gt; 25 &amp; &lt; 35 seconds</td>
</tr>
<tr>
<td>E</td>
<td>&gt; 35 &amp; &lt; 50 seconds</td>
</tr>
<tr>
<td>F</td>
<td>&gt; 50 seconds</td>
</tr>
</tbody>
</table>

(for unsignalized intersections)

The LOS analyses show that Alternative 3 will have a much greater impact at some of the intersections than either the Proposed Action or Alternative 2. Specifically, the intersections of Oak Bay Road/Beaver Valley Road and Oak Bay Road/Walker Way would drop to LOS “E” under Alternative 3, although the intersections of Paradise Bay Road/Oak Bay Road and Paradise Bay Road/Teal Lake Road would continue to operate at good levels of service. The side-street movements at the intersections along SR 104 would continue to experience considerable delay as noted under the existing conditions, the Proposed Action, and Alternative 2.

Transit Service
Development under Alternative 3 would be more intense than Alternatives 1 or 2. As discussed in the “Affected Environment” section, transit service is currently provided by Jefferson Transit between Port Townsend and Poulsbo via the Tri-Area and Port Ludlow. Service is provided daily, however, service is reduced on the weekend. Although development under Alternative 3 would generate more traffic than Alternative 1 or 2, it is not sufficient to warrant additional public transit service, since much of the traffic will be regional. There is a potential to reduce some of the site traffic through private van or mini-bus service to shuttle hotel guests between the various activity centers within Port Ludlow or to and from ferry terminals.
Non-Motorized Facilities
Alternative 3 would likely generate additional pedestrian activity along the adjacent roadways as noted under the Proposed Action and Alternative 2. A boardwalk along the shoreline extending east from the Inn, similar to the one proposed in Alternative 1, has been shown on the site plan. Additionally, the existing Port Ludlow trail system could serve many of the needs of the hotel guests.

Site Access
Access to the Resort under Alternative 3 would be the same as under the proposed access, i.e., either from the intersection of Oak Bay Road/Walker Way/Marina View Drive or via Harbor Drive.

The LOS at the intersection of Oak Bay Road/Walker Way/Marina View Drive would be “E”, which is lower than projected for either Alternative 1 or 2, indicating the potential need for upgrades to the intersection. Left-turn storage on Oak Bay Road at Marina View Drive would not be needed, and the sight distance conditions would be the same as those noted under the Proposed Action.

Parking
A multi-level parking structure would be provided under Alternative 3. Additionally, additional stalls would be provide in surface lots. This amount of parking is greater than the amount proposed for the Proposed Action or Alternative 2. The parking lot layout and access for the Inn and the adjacent townhomes would remain in its current configuration under Alternative 3.

Traffic Impacts
The development of the Port Ludlow Resort, if constructed as proposed under the 1999 Plan, would generate over 3,200 additional weekend daily trips, with over 300 of those trips occurring during the peak hour. The impacts associated with development under Alternative 3 would be much greater than those under the Proposed Action or Alternative 2. Specifically, the intersections of Oak Bay Road/Beaver Valley Road and Oak Bay Road/Walker Way would drop to LOS “E” under Alternative 3, although the intersections of Paradise Bay Road/Oak Bay Road and Paradise Bay Road/Teal Lake Road would continue to operate at good levels of service. The side-street movements at the intersections along SR 104 would continue to experience considerable delay as noted under the existing conditions, the Proposed Action, and Alternative 2.

Cumulative Impacts
The traffic volumes and LOS analyses described in Alternative 3 include estimates of future traffic growth for the year 2010. An annual growth rate ranging from 2.68 percent to 6.09 percent plus pipeline development trips were used to project these volumes to account for background traffic growth in the area and the cumulative effects of this growth. Details and summaries of the future volumes and analyses can be found in the Appendix.
3.6.3 Mitigation Measures

Direct impacts associated with the Alternative 1 - Preferred Action, are limited. Specifically, new trips associated with the Proposed Action will have a negligible impact on the LOS at the local intersections within Port Ludlow and therefore no mitigation is needed. The County arterials in the Port Ludlow area are operating at acceptable levels of service and will continue to operate acceptably with the Proposed Action.

The side-street movements at the intersections of Beaver Valley Road/SR 104 and Paradise Bay Road/SR 104 are currently operating at LOS “F” and will become increasingly more congested with or without development under any of the alternatives. The congested conditions are typical during the peak summer season and are regional in nature. Considerably less congested conditions occur during the off-peak seasons.

Both of these intersections have had turn lanes constructed on SR 104, and any additional channelization improvements would primarily be constructed on the side streets. The capacity analyses at these intersections were conducted again to determine improvements that could be made to provide a LOS better than “F”. The installation of a traffic signal and additional side-street lanes would raise the LOS above “F”, although the intersection of SR 104/Paradise Bay Road would still have saturated conditions in the eastbound direction in the future (assuming the over 50 percent increase in these volumes occurs). These improvements would result in LOS “E” at SR 104/Paradise Bay Road and LOS “C” at SR 104/Beaver Valley Road.

WSDOT currently has no near-term projects proposed for the area. In its 20-year Highway System Plan, WSDOT lists improvements to SR 19 between SR 104 and Chimacum/Center Roads and to SR 104 between Beaver Valley Road (SR 19) and the Hood Canal Bridge. The SR 19 long-term improvements include widening to four lanes. The long-term SR 104 improvements would include widening to four lanes, intersection improvements, and access management plus widening of the Hood Canal Bridge to four lanes to address the congested conditions. These improvements proposed by WSDOT are large-scale projects to address regional needs along a highway of statewide significance. The number of trips associated with the Proposed Action impacting either of the intersections along SR 104 is a small percentage of the total traffic through these intersections (0.6 percent at Beaver Valley Road and 0.5 percent at Paradise Bay Road) and is not creating the need for these improvements.

Based on the previous analyses and the impacts associated with the alternatives, no off-site mitigation is recommended for Alternative 1 or 2. Some channelization improvements may be required at the Oak Bay Road/Walker Way and Beaver Valley Road/Oak Bay Road intersections to raise the LOS above “E” for Alternative 3. Under all alternatives, enhancements to the on-site parking operations are recommended as described in the previous sections in order to regulate peak demand.
3.6.4 Unavoidable Adverse Impacts

The traffic study prepared for this DSEIS demonstrates that the proposed action will not result in significant unavoidable adverse impacts that cannot be mitigated. Traffic volume increases along SR 104 from external sources will result in continued LOS “F” conditions in the future during peak (summer) season. This will occur with or without development under the Proposed Action. The construction of traffic signals will be needed in order to accommodate the additional traffic as noted in the previous section, and additional lanes on SR 104 will be needed per WSDOT’s long-term plan. No other significant unavoidable adverse impacts have been identified with respect to traffic that cannot be mitigated. Although the amount of traffic is within the capacity of the roadways, or improvements can be constructed to mitigate the levels of service, the presence of additional traffic on the roadways may be perceived as undesirable by existing residents.
3.7 PUBLIC SERVICE AND UTILITIES

3.7.1 Fire/Emergency Services

3.7.1.1 Affected Environment

The Port Ludlow Resort is served by Jefferson County Fire Protection District #3. Fire District #3 provides emergency fire, hazardous materials, and medical services from four fire stations: one in Port Ludlow, one in Paradise Bay, one on South Point Road, and one in Chimacum. The Port Ludlow fire station (Station No.31) was completed in May 2002 and is located at 7650 Oak Bay Road. This station is manned by a minimum of two career firefighters/EMTs 24 hours a day, 365 days per year, and staff is augmented by five volunteers who respond from their homes in the Port Ludlow MPR. In addition, the Fire Chief is at this station during the weekdays. This station houses two Class A pumper trucks, two Advance Life Support ambulance vehicles, one wildfire engine, and two support vehicles.

The Jefferson County Fire Protection District No. 3 responded to a total of 344 alarms in 2002, with 159 of those alarms coming from the Port Ludlow MPR. Call data is not reported for the Resort complex independently of the larger MPR.

Information provided by Fire District 3 indicates that the typical current response time from Station 31 to the MPR is 2 to 3 minutes from the time of alarm. A typical average immediate response includes three personnel with an additional average of one volunteer.

Stations No. 32 (Alder Street in Paradise Bay), Station No. 33 (101 South Point Road), Station No. 11, and Station No. 81 (Kingston) are also available to assist with incidents at the Resort. Station No. 32 will provide a volunteer response 30 percent of the time, with a typical response time of 7 to 8 minutes. Station No. 33 will provide a volunteer response 45 percent of the time, with a typical response time of 8 to 10 minutes. Station No. 11 will dispatch immediately for any incident larger than an emergency aid call in the Resort area, with a typical response time of 7 to 9 minutes. Stations No. 81 (Kingston) and No. 77 (Kitsap Fire District No. 18/Poulsbo) are also available for any incident that has the potential of overwhelming initial response teams.

Detailed information regarding Fire District No. 3 capabilities is presented in Appendix G.

Development-specific fire flows are determined by the Jefferson County Fire Marshall. Fire hydrant tests were conducted in 2000 and 2003 and show adequate flows are available to the Resort area.

Existing upland structures were constructed in compliance with fire protection codes for the specified use applicable at the time of construction. Existing townhomes are sprinkled. The new townhomes/condominiums are anticipated to be considered “Type 5, 1 Hour” occupancies and also will be sprinkled.

Currently, mid-size emergency medical air transport helicopters can land in open areas within the Resort. No area is designated as a formal landing zone, however.
Within the Resort, propane storage for boats at the marina is currently located adjacent to the Dockmaster’s office. Propane storage for the eastern half of the Ludlow Bay residential units is located at the east end of the Resort, between Building 700 and Building 400.

The existing fire protection system at the Port Ludlow Marina consists of three individual portable saltwater pump units located in small shed storage areas dispersed throughout the float system. Chapter 9 of the Port Ludlow Marina Operations Manual addresses marina emergencies and outlines procedures for responding to emergencies such as person overboard, medical emergencies, fire control, safety, security, fueling, oil spills, sinking boats, hazardous materials, severe weather, earthquakes, and threats. The Marina staff is trained to respond to emergencies per procedures set forth in this manual.

3.7.1.2 **Environmental Impacts**

**Alternative 1. Preferred Project – 2003 Resort Plan**

Alternative 1 will result in an additional 101 residential units within the Resort, as well as a new 7,500-square-foot recreation building, the new Harbor Master Restaurant, and the 100-slip expansion of the marina. Use of the waterfront area for large, outdoor special events will be significantly curtailed.

All new construction will comply with current fire code standards. All new residential units, as well as the recreation building and restaurant, will be sprinkled and will not exceed 35 feet in height. The new residential units will result in an incremental increase in emergency aid calls.

Vehicular access to the Resort from Oak Bay Road will remain unchanged. Within the Resort, internal access to the Inn at Port Ludlow and adjacent residences will be separated.

A designated emergency medical helicopter landing site will be located at the south end of the Admiralty III area.

Two new underground propane storage areas will be added – one within Ludlow Bay Village and one within Admiralty III. If the new Harbor Master Restaurant or Recreation building require propane storage, the storage will be located outside, adjacent to the buildings.

The *Port Ludlow Marina Expansion SEIS (2002)* addressed fire suppression at the marina as follows:

A piped fire suppression system with call boxes will be provided for all new floats. The system will consist of a piped connection to the existing fire line on land near the existing Marina office. A double detector check valve, post indicator valve, and siamese fire department connection will be provided in the vicinity of the Marina office. A dry line pipe will run from the landside, down the existing gangway, and will be run along the docks under the walers. A fire department connection standpipe will be installed on the dock system per code such that no point on the new dock system will be more than 75 feet from a fire connection standpipe. In addition, a fire hose cabinet with a direct connection to the standpipe will be located at each fire standpipe location; a fire extinguisher will also be located at each of the fire hose cabinets.
Additional fire standpipes may be added to the existing floats on A-, B-, C-, D-, and E-Docks and along the existing central walkways to improve firefighting capabilities on these existing floats.

The new fire suppression system will improve the ability to control and contain fires at the Marina. With the presence of a fire piping system, additional fire extinguishers, fire hose cabinets, and numerous fire connection ports, the ability to fight fires is greatly improved. This will reduce the pollution of the environment through faster containment of fires resulting in less sunken vessels, oils, and other debris that may occur in the event of a fire.

**Alternative 2. 1993 Resort Plan**
The impacts of Alternative 2 to fire and emergency medical services would be similar to the impacts associated with Alternative 1. Current internal road access would remain unchanged and no emergency medical helipad would be designated; emergency helicopter landings would still occur, however.

**Alternative 3. 1999 Resort Plan - No Action**
Alternative 3 could result in the most intense use of the site and thus the greatest impacts to fire and emergency medical services. Increased use of the site would result in an increase in both emergency medical and fire calls. It is unclear whether Fire District #3, working with the District on a response program, could provide an adequate response to calls during the peak season if this Alternative was developed as originally envisioned.

### 3.7.1.3 Mitigating Measures

**Proposed:**
- For each new residential unit, the developer will pay Fire District #3 $193.00 per unit in mitigation/impact fees.
- A portion of the property tax for development within Port Ludlow goes to Fire District No. 3; in 2002 this amount was $77,097.
- Residential units extending over the edge of the artificial lagoon will include 24-foot-wide catwalks connecting the decks and wrapping around the building side in order to provide emergency egress to the land side.
- A designated emergency helicopter landing zone will be located at the south end of the Admiralty III area.
- All propane storage areas will meet applicable code requirements.

From the *Port Ludlow Marina Expansion SEIS (2002)*
- At least two fire hydrants and adequate emergency access will be provided in the area of the proposed Marina expansion.
- A dry line piped fire suppression system will be provided on float C, down the central walkway, and on all new docks. Additional extensions to the existing docks may also be constructed. This new piped system will provide firefighting capabilities such that each area
on the new float system is no more than 75 feet from a firefighting apparatus. Improved firefighting capabilities will reduce the potential for debris and pollutant contamination from fire events.

- Marina personnel and liveaboard residents will receive training in emergency firefighting procedures.

- Fire call boxes will be provided on the new floats and down the main walkway. These alarms and the main fire alarm for the Marina will be linked to a monitoring service or other entity to assure automatic alert of appropriate authorities.

- A connection will be provided between B-Dock and C-Dock to provide additional access to the docks for firefighting crews and for egress for boaters from the docks in the event of a fire emergency. This will allow each dock to be accessed by two gangways instead of the current one-gangway access system for Docks C, D, and E.

3.7.1.4 Unavoidable Adverse Impacts
No significant unavoidable adverse impacts to fire and emergency medical services are anticipated. Increased use of the Resort by residents and guests will increase the demand on fire and emergency services, however.

3.7.2 Water Service

3.7.2.1 Affected Environment
Water service to Port Ludlow is provided by Olympic Water and Sewer, Inc. (OWSI). An eight-inch water main runs through Admiralty I and II and loops around the plat of Ludlow Bay Village.

OWSI obtains its domestic and irrigation water from groundwater (see Section 3.2.2 “Groundwater” of this Draft SEIS). The Port Ludlow development has water rights equal to 186 million gallons per year. Storage totaling 895,000 gallons is provided in four reservoirs.

Existing water mains serving the Resort complex are shown in Figure 24. OWSI produces an annual “Well Productions Report” to monitor their water usage. For the year 2002, the OWSI combined annual average production was 187.2 gpm from all aquifers, or 98.4 million gallons of water for the year.

The Port Ludlow Marina Expansion Draft SEIS (2002) states that of the total 98.4 million gallons, the Marina accounted for approximately 1.7 million gallons (4,602 gallons per day), or approximately 2 percent of total water use.

Annual water use for the Port Ludlow development is expected to stay well below the 186 million gallons of annual water rights.

The adequacy of fire flow is addressed in Section 3.7.1, Fire/Emergency Services.
3.7.2.2 Environmental Impacts

Alternatives 1, 2, and 3
All Resort Plan alternatives will result in an increased demand for domestic and irrigation water. The new residential units and Resort recreation facilities were anticipated in the design of the water system. The adequacy of groundwater supplies is addressed in Section 3.2.2.2 of this Draft SEIS.

Use of domestic water also will be increased at the new marina slips, as well as at associated upland facilities such as the laundry, restroom, and showers. The following summarizes the anticipated increase in water usage at the expanded marina (Port Ludlow Marina Expansion Draft SEIS, 2002):

- Anticipated total Marina Water Usage with expansion = 6,457 GPD/2,356,805 gallons per year.
- Total annual increase in water usage = 620,500 gallons per year, or a 0.7 percent increase in year 2001 total Port Ludlow water usage.

Thus, with the Marina expansion, the annual water usage for the Port Ludlow development will not exceed their 186 million gallons of annual water rights.

The Uniform Building Code does not address the number of restroom facilities required in marinas. Marina design guidelines recommend adding one additional bathroom stall per 100 slips for expansion (Tobiason, 2000).

3.7.2.4 Mitigating Measures

Proposed (Alternative 1):
- Build-out of the Resort, including a 100-slip expansion of the Marina was anticipated in planning for the water system.
- Water system improvements will be installed as required at the time of development.

3.7.2.5 Unavoidable Adverse Impacts

No unavoidable adverse impacts to the water system are anticipated.

3.7.3 Sanitary Sewer Service

3.7.3.1 Affected Environment

Sanitary sewer service to Port Ludlow is provided by Olympic Water and Sewer, Inc. (OWSI). All development within the MPR is connected to the sanitary sewer system. Within the Resort, sewage is collected in gravity lines and subsequently pumped via a lift station into a force main and conveyed to the treatment plant located north of the Resort. The 2002 Port Ludlow
Development Impact Monitoring Report states that the maximum-month average daily treatment plant flow occurred in January and was 195,000 gallons per day. The treatment plant has a permitted design capacity of 640,000 gallons per day. Key parameters measured in effluent discharge (i.e., biochemical oxygen demand, total suspended solids, and fecal coliform) were well below adopted standards. The existing sewer system within the Resort complex is shown in Figure 24.

The Port Ludlow Marina Expansion Draft SEIS (2002) states that at the marina, the existing sanitary sewer system consists of one stationary boat sewage pump-out system installed on the fuel float and a new portable pump-out facility. The stationary boat sewage pump-out is a Keco Model installed in the early 1990s. The existing discharge piping and system is in working condition and has sufficient capacity to support the Marina. The new portable pump-out facility was installed in April 2002.

The draft Resort at Ludlow Bay Marina Regulations and Policies address discharge of gray and black water in Section III D., as follows:

D. DISCHARGE OF BLACK WATER AND GRAY WATER

1. All vessels, which moor in the Marina, must be in compliance with all regulations established by the United States Coast Guard or other federal or state regulatory agencies.

2. Discharge of black water from vessels while in Ludlow Bay is prohibited.

3. Sanitary waste disposal facilities are available at designated locations within the Marina at no charge to users. All users shall use these facilities for the disposal of raw sewage.

4. Liveaboards must pump their holding tanks on a monthly basis.

5. A pump-out log is located on the fuel dock shed, all vessels utilizing the pump-out must sign the pump-out log.

6. The discharge of gray water is currently under review by the State but discouraged while in the Marina. Only Biodegradable soaps and cleaners may be used while in the Ludlow Bay Marina.

Item 9 of the Resort at Ludlow Bay Liveaboard Agreement addresses sewage disposal as follows:

- Vessels must be equipped with a Coast Guard-approved holding tank. Liveaboards are required to use the pump-out station Monthly. Failure to do so will result in termination of the liveaboard agreement. You will move off your boat or move the boat out of the Marina within ten (10) days of non-compliance. A liveaboard pump-out log will be kept and updated daily.
Boats at-anchor in the Bay (both transient and permanent at-anchor) can use Port Ludlow pump-out facilities but cannot be required by Port Ludlow to do so (per existing state and federal laws).

3.7.3.2 Environmental Impacts

Alternatives 1, 2, and 3
The existing sanitary sewer system, including the treatment plant, has adequate capacity to serve all proposed Resort Plan alternatives.

The Port Ludlow Marina Expansion Draft SEIS (2002) concluded that expansion of the Marina will create an increased demand for sewage pump-out and marina enforcement services. A second portable sewage pump-out facility will be provided as part of the Marina expansion construction project.

3.7.3.3 Mitigating Measures

Proposed (from the Marina Expansion SEIS):
- Two portable pump-out carts will be available for use in addition to the existing fixed pump-out facility.

- Enforcement of rules regarding discharge of black water will be strictly enforced by Marina management.

- The Marina Liveaboard Agreement, Regulations and Policies, and Best Management Practices have been reviewed and revised to address current Marina issues, including discharge of sewage.

No mitigating measures are required within the upland portion of the Resort.

3.7.3.4 Unavoidable Adverse Impacts

No adverse impacts related to sanitary sewer service are anticipated.