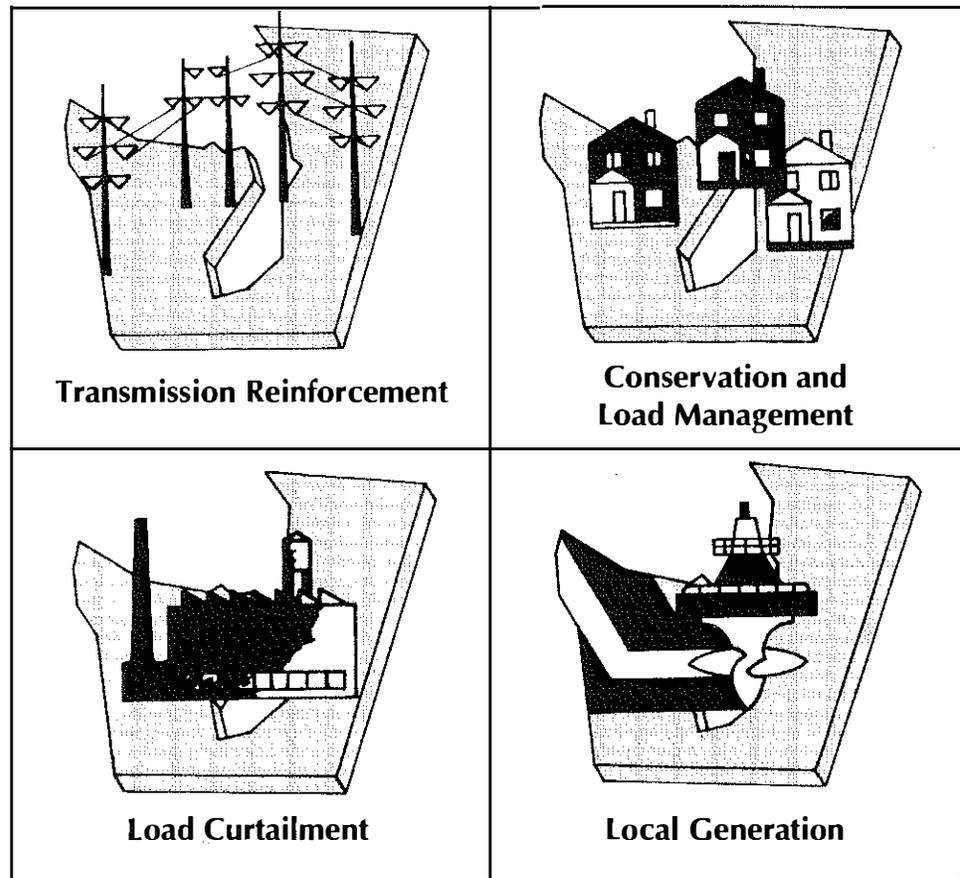


# Puget Sound Area Electric Reliability Plan

## Supplemental Environmental Analysis Schultz Substation





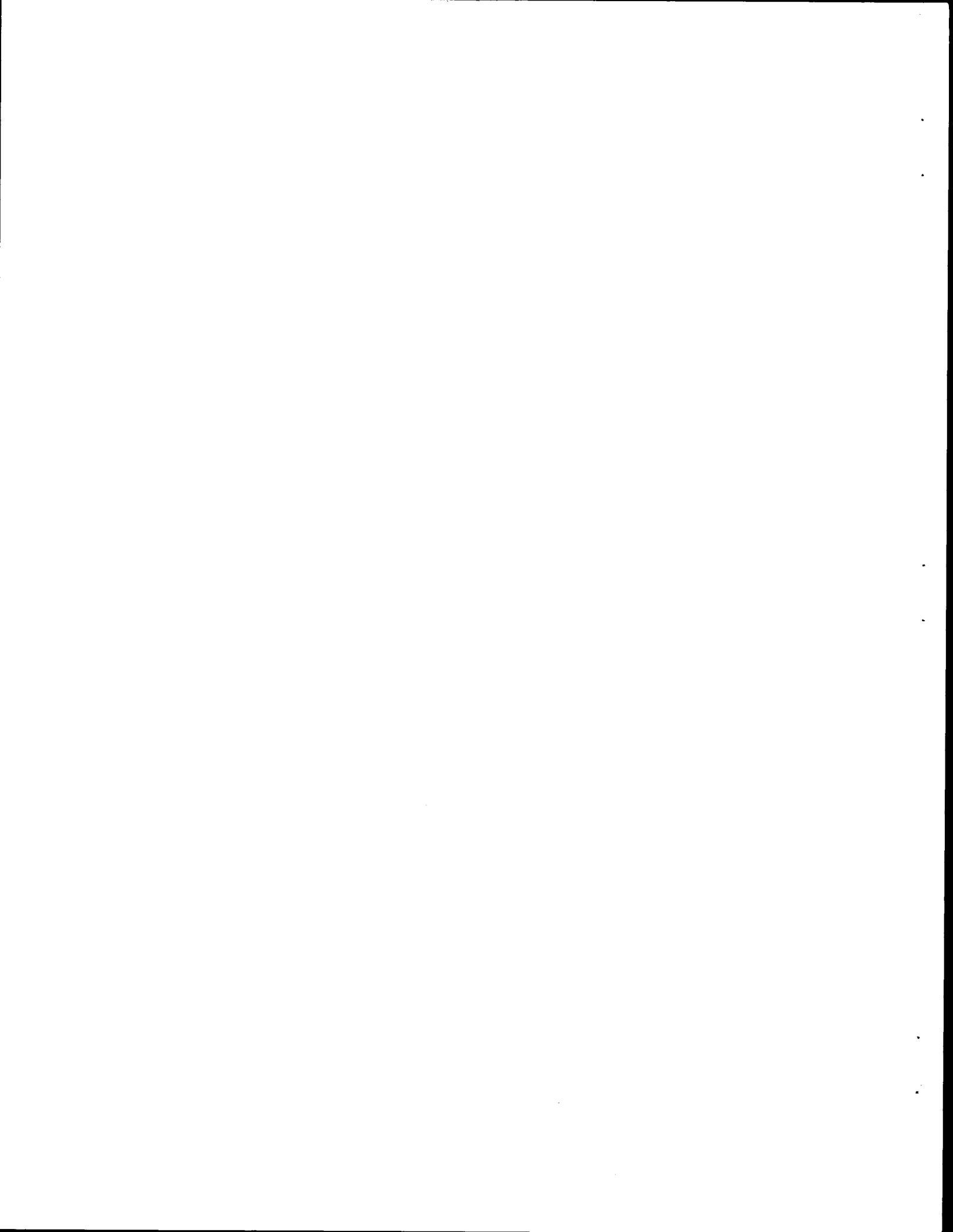
**FINAL ENVIRONMENTAL IMPACT STATEMENT  
PUGET SOUND AREA ELECTRIC RELIABILITY PLAN**

**Appendix G  
Supplemental Environmental Analysis  
Schultz Substation**

**Bonneville Power Administration  
U.S. Department of Energy**

Appendix G has been updated to include new information obtained since the Draft EIS was published in September 1991. Revisions to the document are underscored.

**April 1992**



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## 1.0 DESCRIPTION OF THE SCHULTZ SUBSTATION

The Draft Environmental Impact Statement and Appendix G, referred to a new proposed substation near Ellensburg, Washington as simply the "new substation." Since publication of these documents BPA has decided to name the substation after Sol Schultz the first Chief Engineer at Bonneville Power Administration. References to the "new substation" have been changed to "Schultz Substation" both within the Final EIS and this document. A brief biography of Sol Schultz is provided inside the back cover.

### PURPOSE AND FUNCTION

The need for the Schultz substation (as for the PSAERP) is to provide a balance between the east-west transmission capacity and increasing demands by the Puget Sound area to import more power from generation east of the Cascades. The majority of Eastern generation is now delivered to Puget Sound over five 500-kV transmission circuits. Four of these circuits come together at a point north of Ellensburg. Schultz substation is proposed at the location where these four circuits converge and occupy a common corridor..

Schultz substation would electrically join the four existing 500-kV circuits in a manner that provides increased operational flexibility and electrical reliability. For example, if a problem occurs now on one of the existing lines east of the proposed substation sites, the entire line would be removed from service. However, once the substation is developed and if the same problem occurs on the line, only the line section east of the proposed substation would be removed from service. The segment of the line west of the substation would continue to serve Puget Sound needs.

A second function of Schultz Substation is the regulation of voltage on the existing transmission lines. Voltage support devices called series capacitors would be installed on the two existing 500-kV transmission circuits between Grand Coulee and Raver Substations. These series capacitors, when operational, will increase the east-west transmission capacity by about 1000 megawatts.

### LOCATION

The preferred alternative proposes creating a new substation near the point where four existing 500-kV transmission lines converge 7-10 miles north of Ellensburg, in Kittitas County, Washington. Portions of Township 19 North and Ranges 18 and 19 East are being considered for Schultz Substation.

Four locations were initially defined as possible sites for the substation. They are identified within the substation siting area on Map 1. These four sites straddle the 500-kV transmission line corridor. Bonneville's preferred site location is Site 3. Sites 2 and 4, have been eliminated from consideration for reasons discussed below.

Site 2 is located within the Sun East subdivision. Owners of affected and nearby lots reviewed the Draft EIS and Appendix G in it's draft form, and provided information on land use impacts to their subdivision, wetland & wildlife issues associated with Currier Creek, as well as site engineering limitations. These conditions make Site 2 nonviable.

Site 4 is the site of BPA's Naneum Substation a demonstration site for a 500-kV gas insulated transmission line cable crossing. Topography at the site is steep, and considering

the much larger size of the proposed Schultz Substation, is unsuitable from a topographic standpoint.

Preliminary layouts for the substation indicate that a fenced area of about 50 acres is required to accommodate initial substation development, a maintenance complex, and potential future expansion. A site of 130 acres is needed.

The sites as shown on the enclosed maps may ultimately shift slightly to the east or west to accommodate a landowner's needs, minimize environmental impacts, or simplify site engineering. Thus these sites should be considered approximate locations.

## **FACILITY DESCRIPTION**

A substation contains several different types of equipment arranged to carry out electrical functions, to minimize safety risk, and to accommodate operation and maintenance. The primary equipment planned for Schultz Substation is labeled on the the preliminary site plan. Photographs of the existing BPA Garrison Substation, are also enclosed to illustrate the approximate size and appearance of what is proposed.

The discussion below describes the equipment that would be installed at Schultz Substation. Refer to the pictures and the preliminary plot plan as you read the following paragraphs.

**Power Circuit Breakers** - Devices that automatically interrupt power flow on a transmission line at the time of a fault. Twelve 500-kV breakers would be installed at the substation in a manner that enables power to be redirected in any manner desired. Several types of breakers have been used in BPA substations over the years. The type planned for the Schultz Substation is illustrated on Photo Page 1. This type of breaker is insulated by a special nonconducting gas (sulfur hexafluoride) hence they are often called gas breakers. Small amounts of hydraulic fluids are used to open and close the electrical contacts within gas insulated breakers. Other than this hydraulic fluid, no toxic or hazardous material is used.

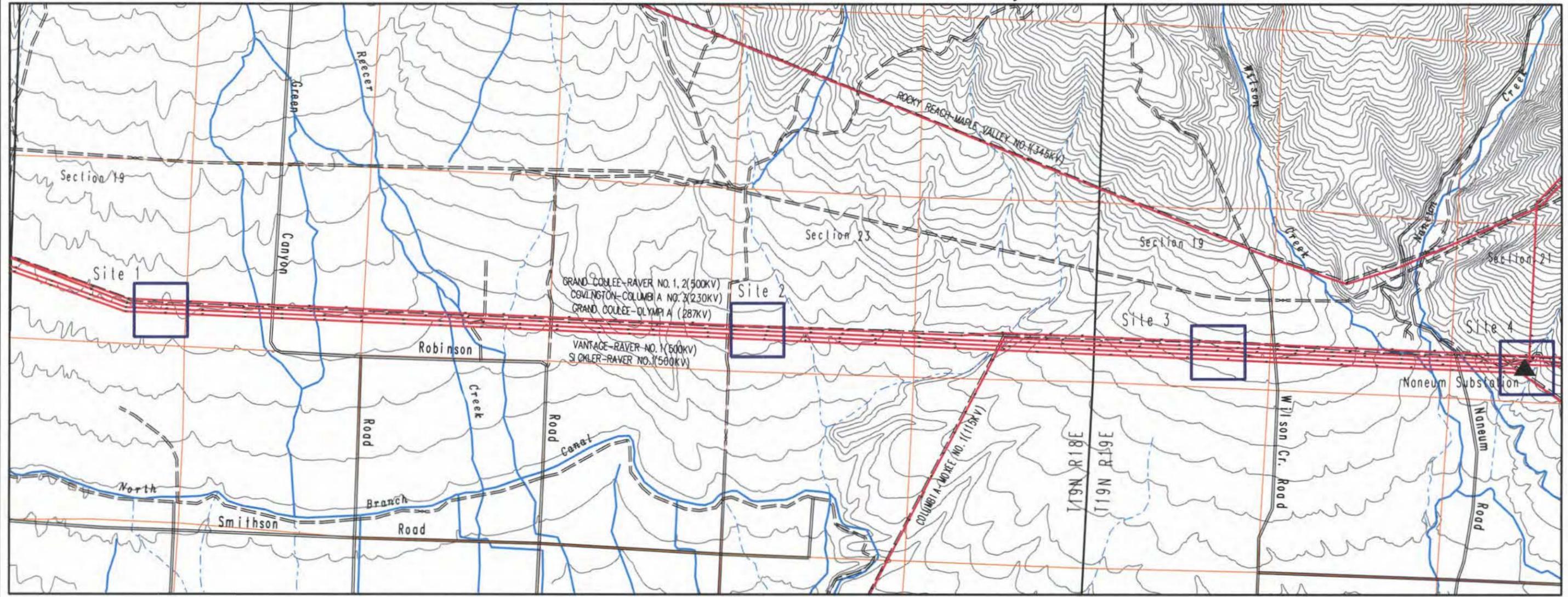
**Switches** - Devices that are used to mechanically disconnect or isolate equipment. Switches are normally located on both sides of circuit breakers. See photo page 1.

**Series Capacitors** - Electrical devices that regulate voltage and increase the capacity of the transmission system. Series capacitors compensate part of a transmission line's natural impedance to the flow of power, allowing the line to carry more power. See photo page 1.

**Bus Tubing, Bus Pedestals** - Power moves within a substation and between breakers and other equipment on ridged aluminum pipes termed bus tubing. This tubing is supported and vertically elevated by pedestals termed "bus pedestals". Approximately 2 miles of 500-kV bus will be installed within the Schultz Substation.

**Substation Dead Ends** - The towers within the confines of the substation where incoming and outgoing transmission lines end. Dead ends are typically the tallest structures in a substation.

# NEW SUBSTATION SITING AREA - Kittitas County, Wa.



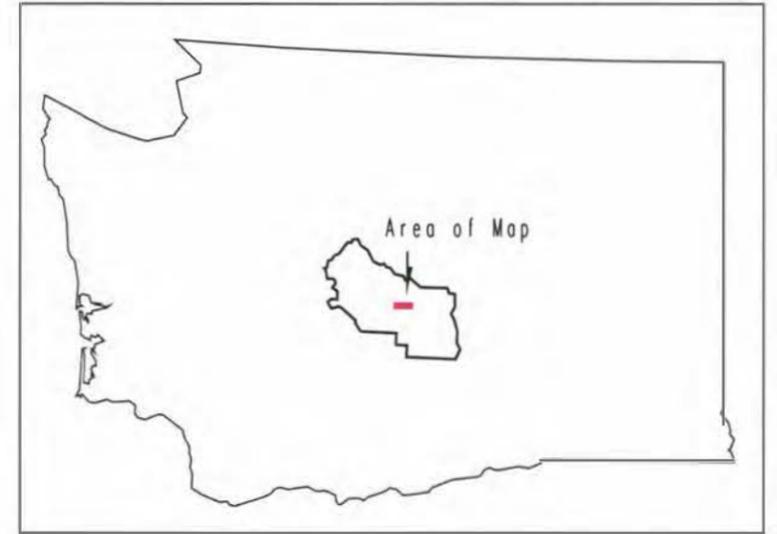
## Legend

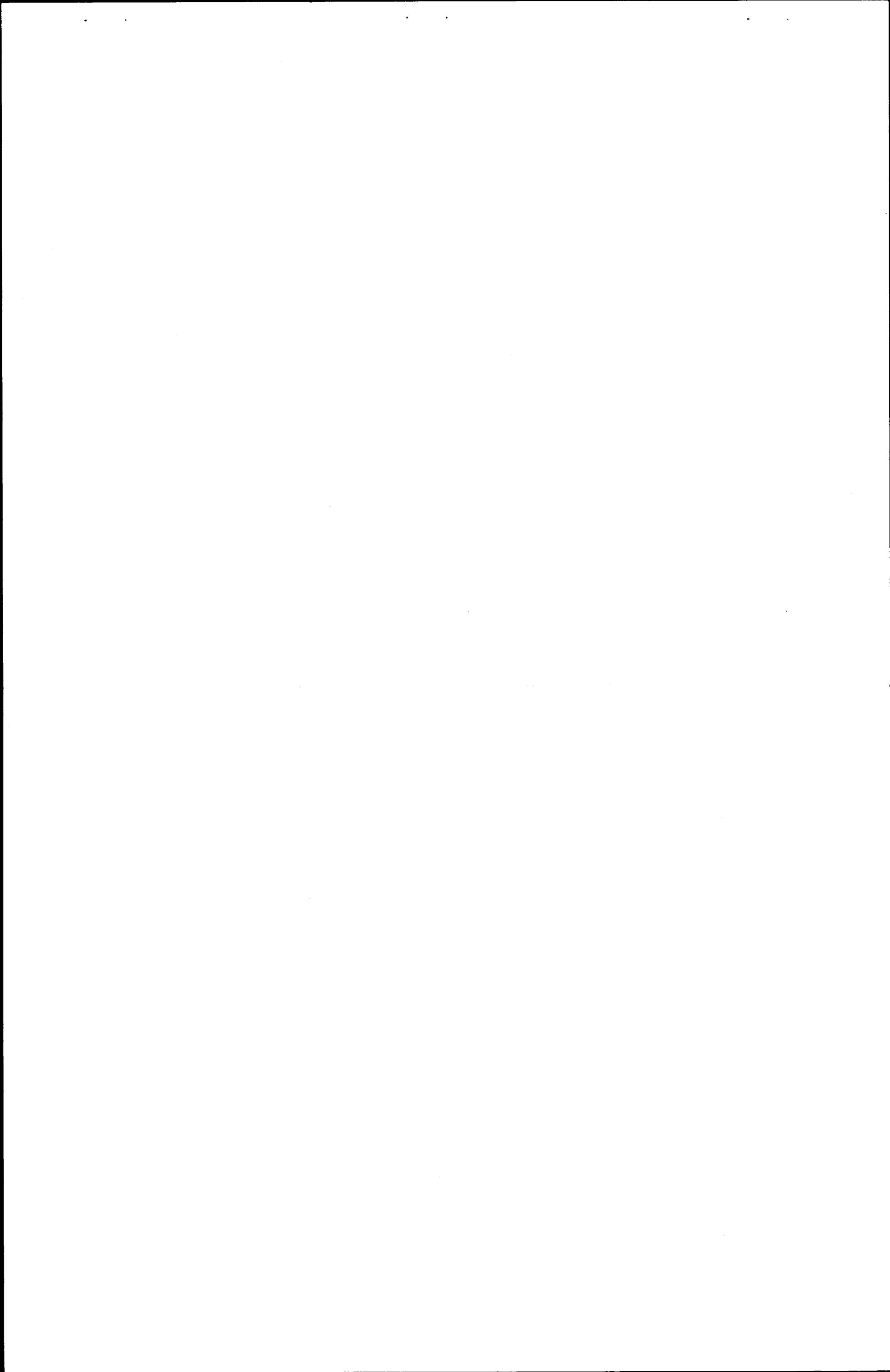
- Paved Road
- Dirt Road
- Section Boundaries
- Surface Hydrology
- 40 Foot Contour Intervals
- BPA Transmission Lines
- Potential Substation Site

NOTE: Alternate Sites 2 & 4 have been eliminated from consideration based on environmental and technical factors.



## Location Map





**Transmission Dead End Towers** - The last transmission line towers on both the incoming and outgoing sides of the substation are called dead-end towers. These towers are built extra strong to reduce conductor tension on substation dead-ends and provide added reliability to the substation.

**Substation Fence** - A chain-link fence with barb wire bayonets on top, to provide security and safety enclosure. Space to maneuver construction and maintenance vehicles is provided between the fence and electrical equipment.

**Substation Rock Surfacing** - A 3-inch layer of rock selected for its insulating properties is placed on the ground within the substation to protect operation and maintenance personnel from electrical danger during substation electrical failures.

**Control House** - Electric/electronic controls and monitoring equipment for the power system are housed within a building located within the substation. Control houses are heated and air conditioned to provide a constant environment for its equipment. Facilities are provided for the substation operator to attend the substation on a part-time basis.

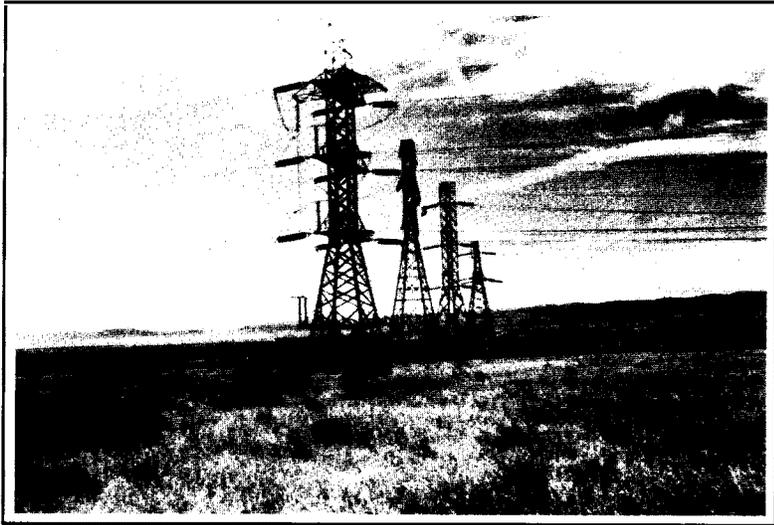
In addition to the above substation equipment, other facilities needed at the substation are:

**Substation Entrance Road** - Substation entrance roads are high quality roads for construction, operation and maintenance staff and their equipment to access the site. Some of the electrical equipment installed at the substation is very heavy and construction and maintenance trucks have wide turning radii. A 60 foot road right-of-way will be acquired. A 20' wide rock road surface with 5' wide road shoulders is planned for the Schultz entrance road. A dirt access road currently follows the existing 500-kV transmission line right-of-way and provides access for transmission line maintenance. This road would likely be realigned and upgraded to become the substation entrance road.

**Electrical Service** - Electrical needs at the substation will be supplied by the local power distribution utility or by BPA itself by tapping the existing Columbia - Moxe 115-kV line. If Kittitas County PUD supplies the power, their existing distribution system serving the area will need to be upgraded or extended. The extent of new distribution facilities depends on the site selected for the substation.

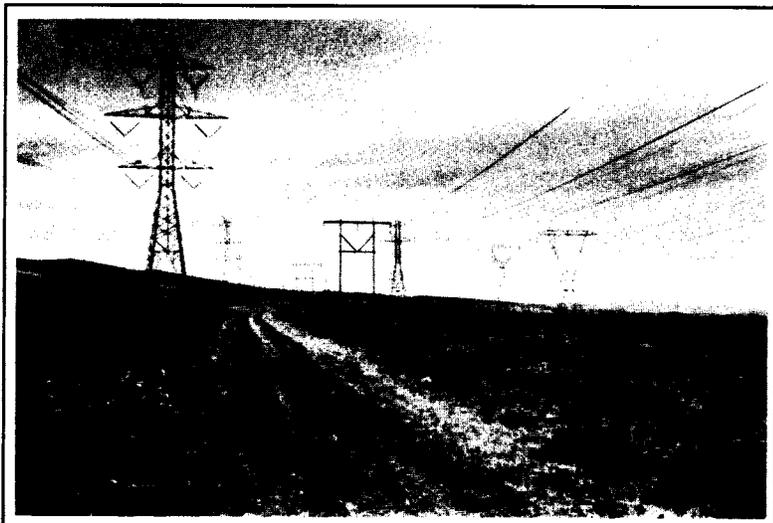
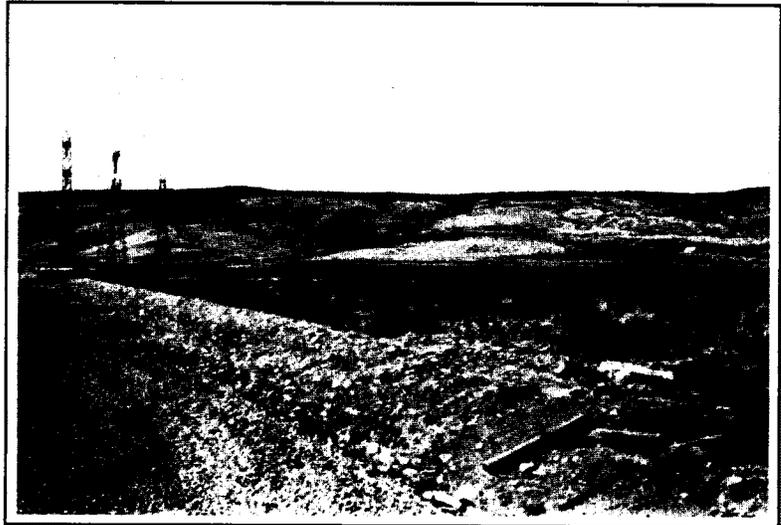
An emergency backup power source is planned within the Schultz Substation. A line tap and station service transformer would be installed on the existing overhead 230-kV transmission line to serve emergency power needs.

**Communication Facilities** - BPA has an existing communication network that delivers signals which operate substation equipment from control centers and other remote locations. This network also provides for voice communication from dispatchers to substation operators and maintenance personnel. Microwave communications require unobstructed "line of sight" propagation between antennas. A tower of suitable height to meet this requirement will be constructed at the substation for an antenna aimed toward BPA's existing Teanaway microwave station. New equipment will be provided. All existing communications equipment including tower, antenna, and radio will be retired at Naneum Substation.



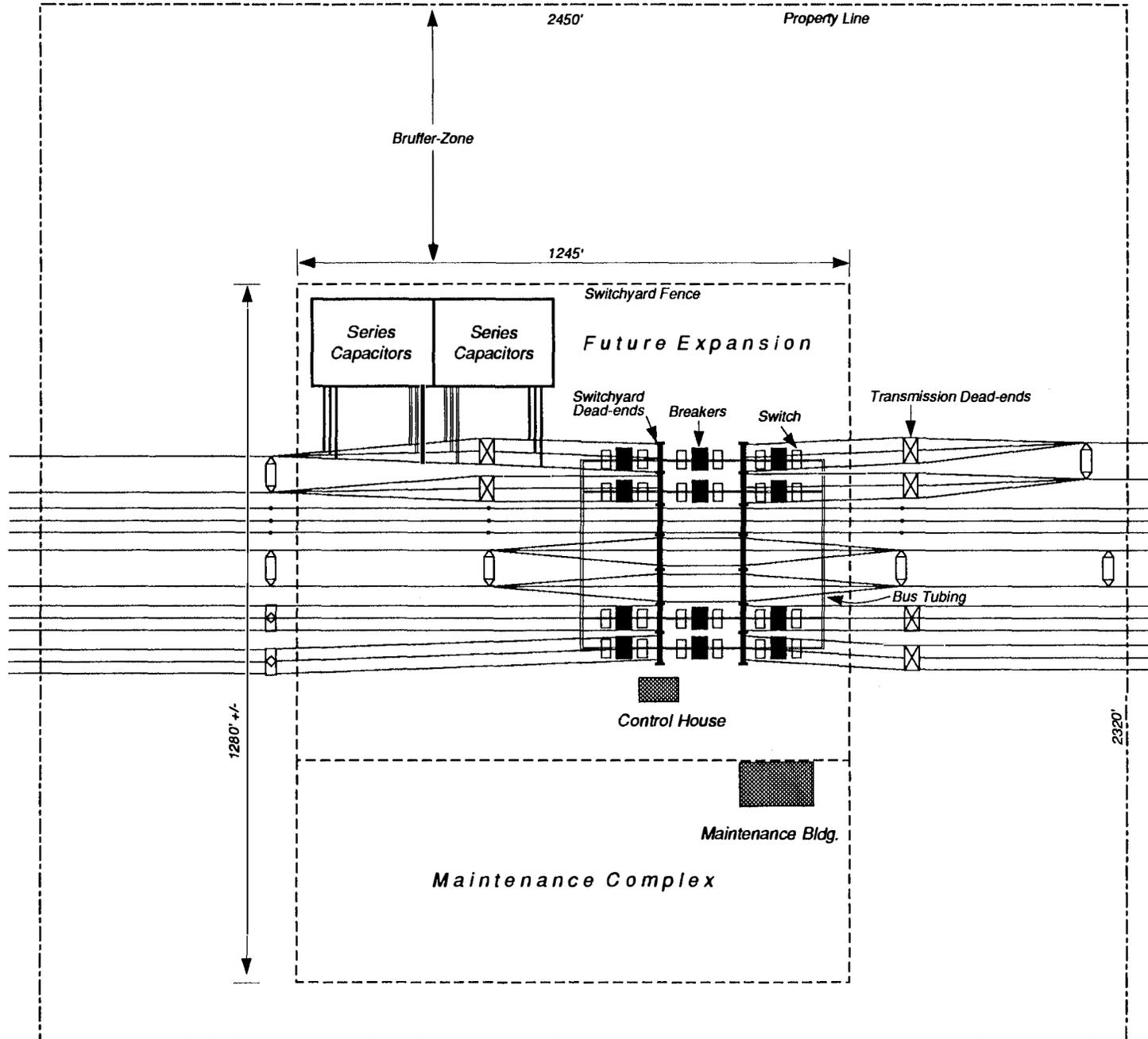
**New Substation  
Alternative  
Site 1**

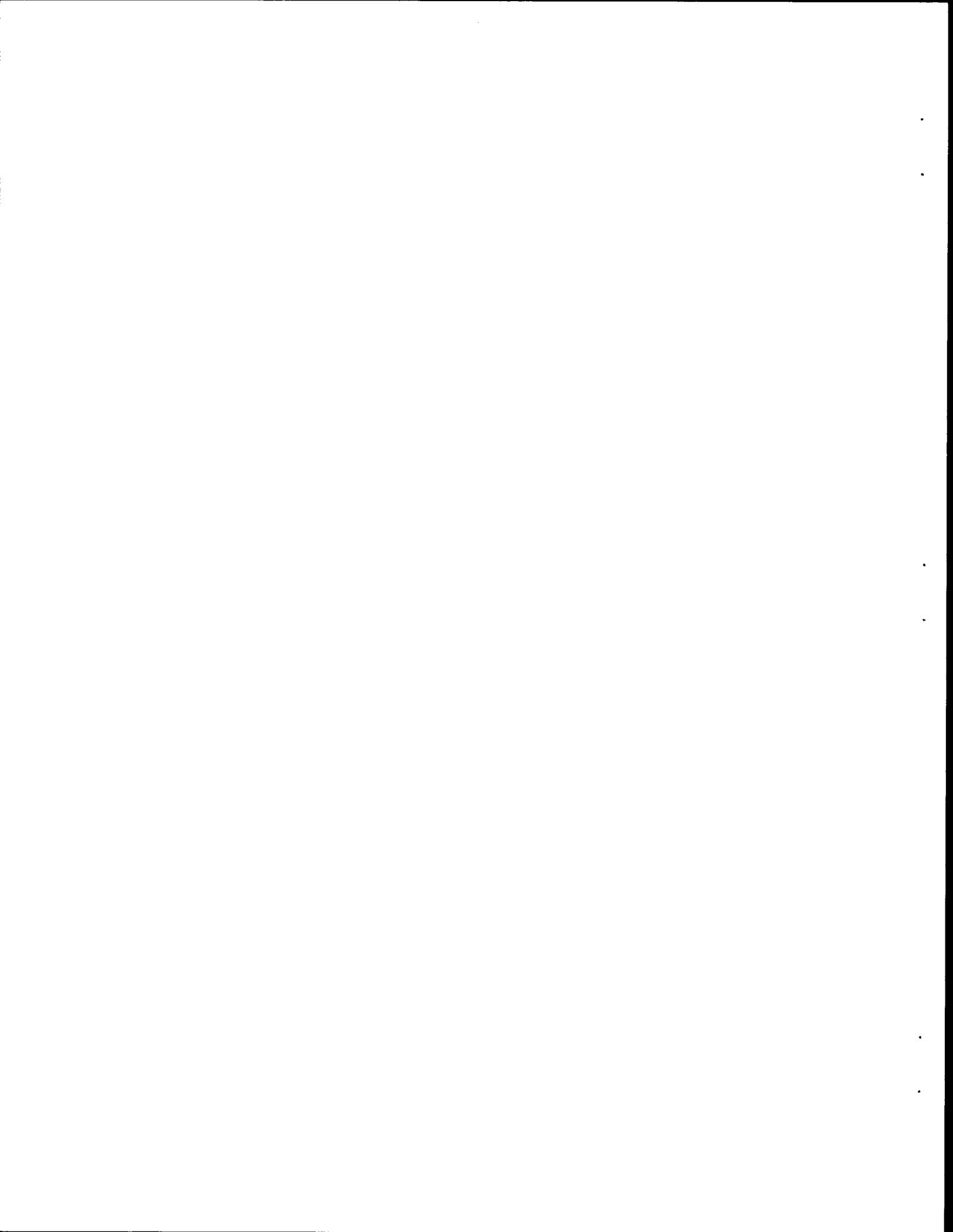
**Alternative  
Site 2**



**Alternative  
Site 3**

# Preliminary Site Plan - Schultz Substation





**Maintenance Complex** - BPA presently has a transmission line maintenance crew and communication facilities maintenance staff headquartered in Ellensburg, Washington. This existing maintenance building is located next to BPA's Ellensburg Substation. The deployment of this existing maintenance staff will not change as a result of the Schultz Substation.

The added maintenance workload imposed by the substation requires additional substation operation and substation maintenance staff (6-10) be assigned to the Ellensburg area. The new operations and maintenance staff will be headquartered within a separate maintenance complex at Schultz Substation. A new maintenance building and a material storage yard will be provided. Staff assigned to the maintenance complex will service both Schultz Substation and other nearby BPA substations. Additionally, staff from BPA's Sickler Maintenance Headquarters and from the existing Ellensburg Maintenance Headquarters require work space at the Schultz Substation. The approximate size and location of the maintenance complex is shown on the plot plan. A water well and septic drainfield will be installed to support operation and maintenance functions.

## 2.0 ALTERNATIVES

### SITING ALTERNATIVES

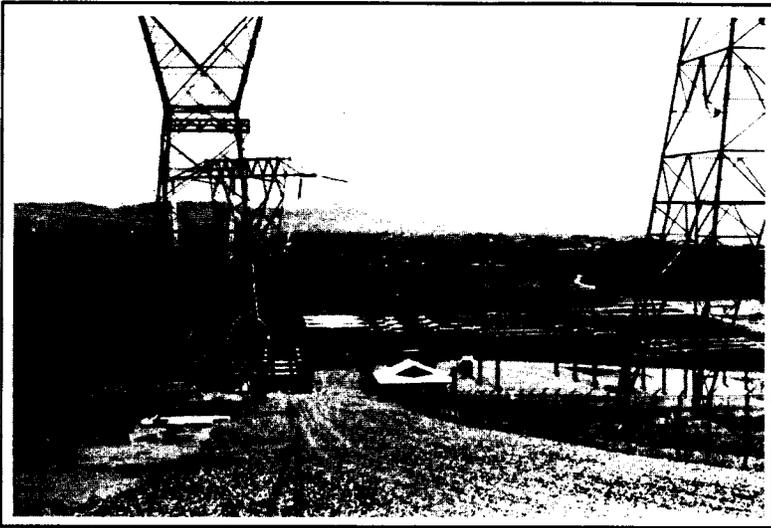
As indicated above, four site alternatives have been defined (See Map 1). Each of these sites is discussed below. The site preferred by BPA planning and design staff is Site 3.

**Site 1** - This site is located east of an angle point in the 500-kV corridor in the Southeast 1/4 of Section 19, Township 19 North, Range 18 East. Current land uses at Site 1 are rangeland for cattle and transmission line corridor. North Branch Canal lies one mile to the south. A picture of the site is provided as photo page 2.

Site 1 would be accessed via a transmission line access road that joins Green Canyon Road one half mile east of the site. Green Canyon Road joins U.S. Highway 97 five miles to the south. Sections 24, immediately west, and Section 18, immediately north, are owned by the State of Washington. The access road would cross two drainages enroute to the substation. The site is dry most of the year, however, spring runoff from the mountain slopes within the Wenatchee National Forest to the north appears to create seasonally wet soils. A soil scientist has reviewed soils and runoff patterns in the site area and has determined that both soils present are not wet for a long enough duration for the site area to be classified as a wetland. Vegetation present on the site also are not wetland indicator plants.

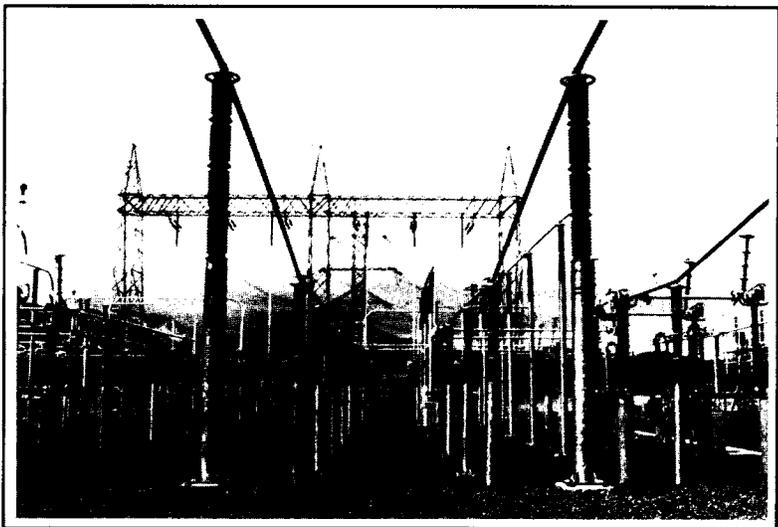
**Site 2** - Site 2 lies immediately east of Happy Canyon Road in Section 23, Township 19 North, Range 18 East. The site is within the Sun East Residential Plat and requires the purchase of several residential lots. Signs on Road 'A' leading to Site 2 indicate that the road is a private road. Hence, access rights from the end of Happy Canyon Road (Kittitas County Road) to Site 2 also would be needed.

Fourteen residences lie within a one mile radius of Site 2. Currier Creek borders the eastern edge of Site 2, and presents a barrier to eastward substation development. A picture of Site 2 is provided on photo page 2.



**Naneum  
Substation  
Alternative  
Site 4**

**Garrison  
Substation  
Aerial View**



**Garrison  
Substation  
Ground View**

Incompatibility with nearby Sun East properties, possible wetland and wildlife impacts to Currier Creek and several engineering constraints combine to make the site nonviable. Site 2 has been eliminated from consideration.

**Site 3** - Site 3 lies about three-fourths mile west of Wilson Creek Road in Section 19, Township 19 North, Range 19 East. A picture of Site 3 is provided on photo page 2.

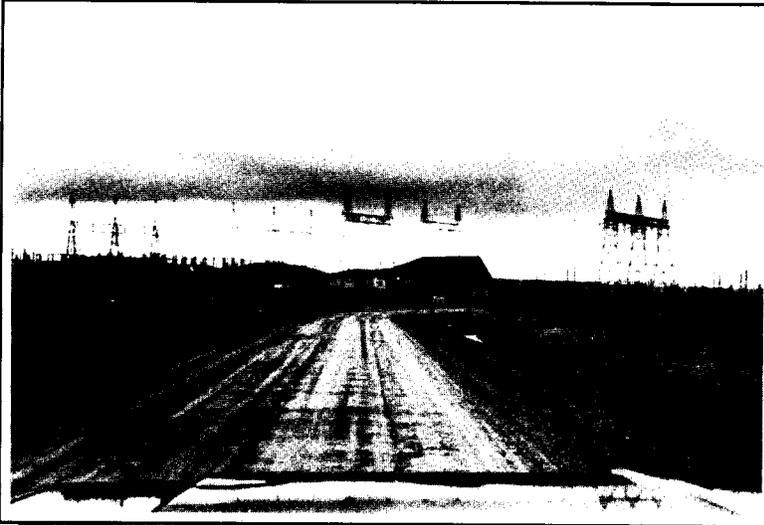
Site 3 slopes to the south and west, and is used as rangeland. Two irrigation ditches lie between Site 3 and Wilson Creek Road. While an access road would need to traverse these ditches, the substation would lie to the west. The chief advantages of Site 3 are moderately sloping terrain and proximity to the junction of the 500-kV transmission lines. Section 24 to the west is owned by the State of Washington. A residence and barn are located about 2,000 feet to the southeast of Site 3. Wilson and Naneum Creeks are about 1-1.5 miles east of Site 3.

**Site 4** - Site 4 is the present site of a gas insulated 500-kV cable crossing named the Naneum Compressed Gas Insulated Cable Site. The site was developed to test and demonstrate a 500-kV underground cable. The cable was installed on the 500-kV line from Sickler at the point where it crosses the Grand Coulee - Raver 500-kV lines. As the site currently performs substation functions, it was considered a logical place to install the new equipment. However, the site is not considered a viable site due to its limited size and steeply sloping terrain, and has been eliminated from further consideration. A picture of Site 4 is provided on photo page 3. The electrical equipment, 500-KV cable and supporting equipment at Naneum would be removed if the Schultz Substation is built.

## **DESIGN ALTERNATIVES**

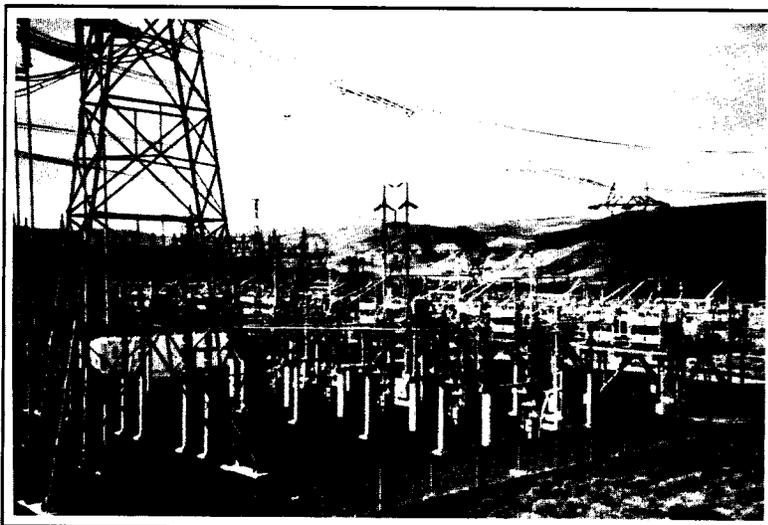
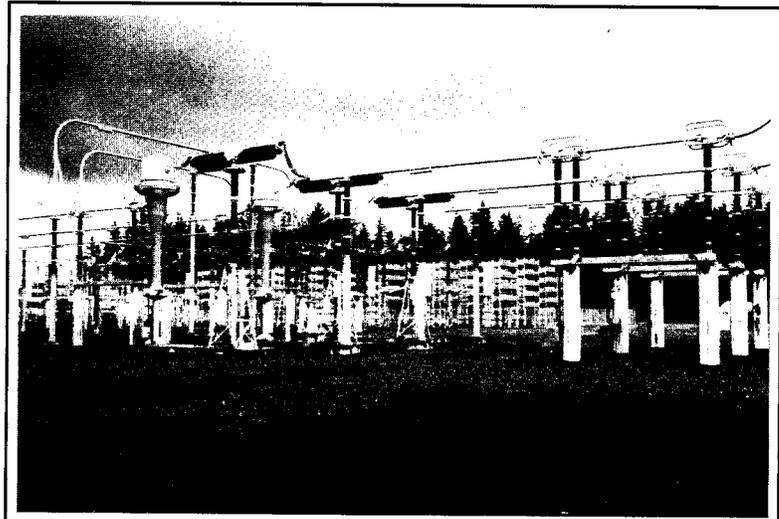
The Schultz Substation will look similar to BPA's Garrison Substation. See photo page 3. As mentioned previously the size of the substation would be roughly 1300' x 1300'. Several preliminary designs have been developed. The variable in these designs is where the existing 287-kV double circuit line, the 115-kV wood pole line, and the series capacitors are located.

With regard to the lower voltage lines, the options studied were to route these lines around the southern edge of the substation, through the substation on bus tubing, or through the substation via substation dead-ends and normal transmission line conductor. Routing the lines around the southern edge of the station requires more land and is more costly. Routing the lines through the substation on bus tubing and pedestals inhibits vehicular circulation and requires high bus tubing on the 500-kV lines which is less reliable than low bus. Routing these lines through the substation via dead-ends is the preferred design. The preliminary site plan, illustrates this design.



**Substation  
Entrance  
Road**

**Power Circuit  
Breakers and  
Switches**



**Series  
Capacitors**

### **3.0 AFFECTED ENVIRONMENT**

Information on existing environmental conditions in the vicinity of the Schultz Substation is provided in the following pages. This information provides an understanding of the area potentially affected by the alternate substation sites.

#### **LAND USE - STUDY AREA**

The siting area for the Schultz Substation is topographically situated between the Kittitas Valley (south and west) and the more steeply sloping Wenatchee Mountains (north). The study area is above the elevation of the North Branch Canal, which provides irrigation water to farms and ranches in the Kittitas Valley. Lands of the study area are hence frequently not irrigated. The dominant land use in the study area is cattle ranching. In some areas water from natural creeks is diverted into irrigation ditches to irrigate hay fields and pastures. Rural residences are sparsely scattered along county roads traversing the area. Recreational use of the area is concentrated within the riparian zones bordering Wilson and Naneum Creeks. Hunting and fishing are the primary recreational uses. A land use map of the study area is enclosed as Map 2. Land uses were delineated using color air photos of the study area and windshield surveys.

The Kittitas County Land Use Plan classifies the alternate sites areas as Forest Range Zone, bordering on Agricultural 20 to the south of Site 1. The substation (power facilities) would be a conditional use in either of these land use zones. Consultation with the Kittitas County Planning Department did not anticipate a problem granting a conditional use permit in view of the existing transmission corridor.

#### **LAND USE - ALTERNATIVE SITES**

The alternate substation sites are centered on an existing BPA transmission line corridor. BPA acquired easements for these lines incrementally over a number of years. The easements give BPA the right to build, operate and maintain these transmission lines. Existing easements do not permit construction of a substation. BPA would acquire sufficient property for the substation site from the property owner(s). Maps 3 and 4 contain aerial photographs of the alternate sites with approximate property ownership lines superimposed to show the properties affected.

The transmission corridor is about 700 feet wide, and contains 7 transmission circuits on 5 different towers (two lines are double-circuit lines). Sites 1 and 3 are used as cattle rangeland. Site 2 is located on three undeveloped residential subdivision parcels (20-30 acres each). Fourteen residences lie within a one mile radius of Site 2. Site 4 is currently a BPA substation site (Naneum Substation). A cluster of 4 or 5 residences lie 1/2 mile west of Site 4 where the corridor crosses Naneum Creek. Lands bordering Site 4 are rangeland.

#### **CULTURAL RESOURCES**

A similar but smaller substation was proposed in 1978. At that time no historic or archaeological sites were identified in the area. The State Historic Preservation Office has been requested to consult their files on the area to see if sites are known in the study area. Their response was that no National Register or eligible properties are known to exist within the area of the proposed sites. Eastern Washington University has conducted an intensive survey of Site 3. No cultural resources were found.

## AESTHETICS

Often, visual impacts are an important issue in siting a substation. The transmission line corridor on which the alternate sites are centered, presently contains five sets of transmission towers. Yet, despite the size of the corridor, and the large size of the existing steel towers, the corridor is distant from densely inhabited areas and thus has created little known aesthetic conflict.

The study area is elevated above the Kittitas Valley (see Map 1 - Base Map and Map 6 - Slopes) and except for the river valleys, no trees restrict visibility. Yet, despite the visually open qualities of the area, viewers in or near Ellensburg and viewers on major transportation routes are too distant (8 or more miles) to be impacted.

The immediate area surrounding Sites 1 and 3 has a low population density. Site 1 is separated by more than a mile from the nearest residence. Site 3 is about 2,000 feet from one residence, however views from the residence to the substation site are restricted by a large barn. One reason Site 2 was dropped from consideration is that it would visually impact nearly 20 year-round families residing of Sun East.

Terrain features also will restrict views to the site in many instances. A hill lies approximately midway between Site 3 and the Ellensburg airport. Several north-south trending ridges also traverse the area north of Ellensburg, which further restricts site visibility to the alternate sites.

No scenic trails, highways or protected scenic resources are known to be present in the study area.

## VEGETATION

Most of the study area is classified as rangeland consisting mainly of bunchgrass, sagebrush, rabbitbrush, bitterbrush, and hopsage. Map 2 illustrates vegetation communities in the study area. The productivity of the rangeland is generally poor. Riparian vegetation occurs along Wilson, Naneum, Currier, Reecer and Canyon Creeks.

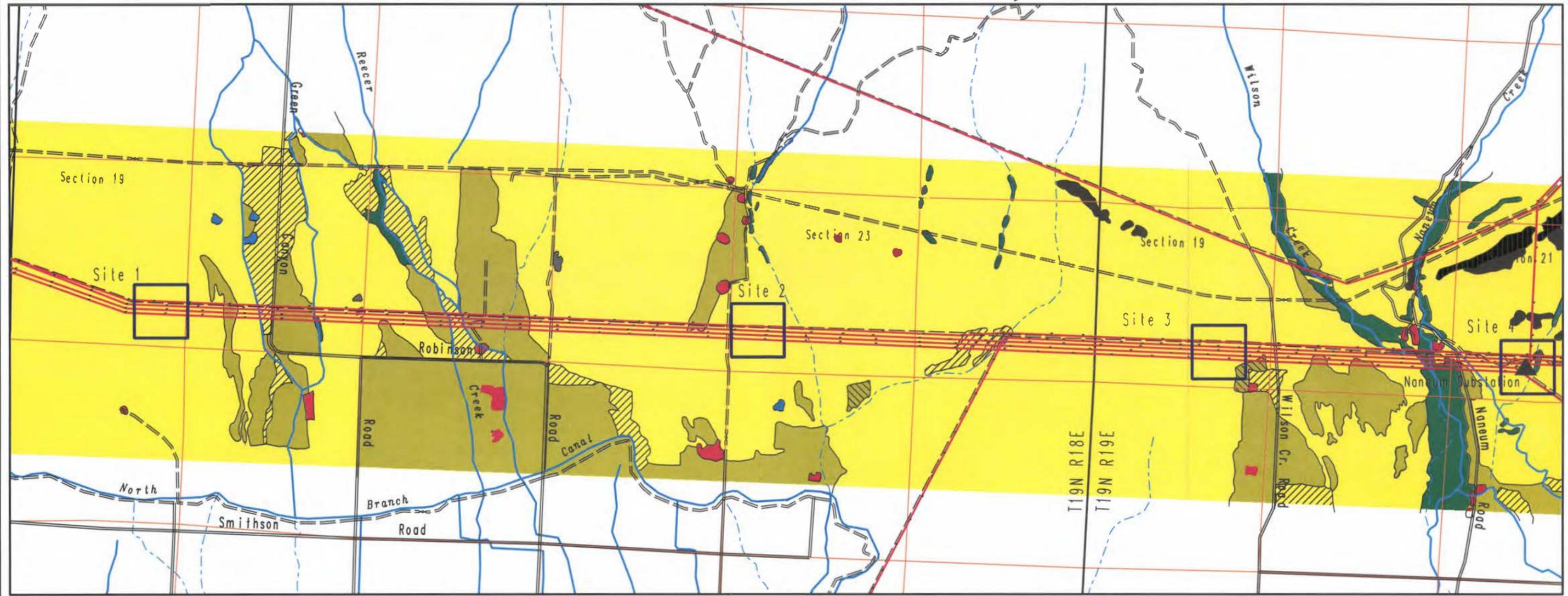
There are no known rare, threatened or endangered plants in the study area. BPA has initiated consultation with the U.S. Fish and Wildlife Service pursuant to the Rare and Endangered Species Act. Their review of the area will further serve to verify that no such plants are present at the alternate sites.

BPA has retained the services of a noxious weed consultant. A list of noxious weeds known to occur in the area has been developed and means of avoiding noxious weed dispersal will be defined and included in the project plan.

## FISH AND WILDLIFE

The habitat predominant in the substation siting area is brush/grass. Aquatic, riparian and cropland habitats also occur but in smaller amounts. Aquatic habits occur along Naneum and Wilson Creeks. Intermittent ponds and the North Branch canal serve irrigation functions and have little value as aquatic habitats. Fishery resources present in Naneum and Wilson Creeks include Eastern Brook trout, Cutthroat and rainbow trout, and non-game species such as minnows and chubs. Riparian habitats associated with these creeks are

# NEW SUBSTATION SITING AREA - Kittitas County, Wa.

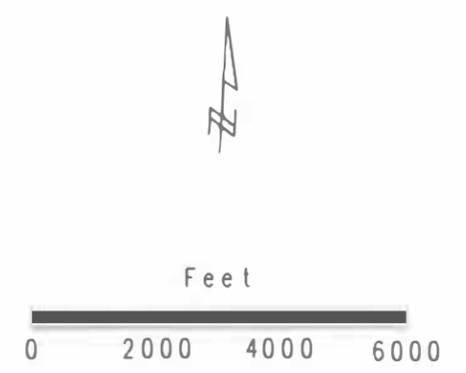


## Land Cover/Land Use

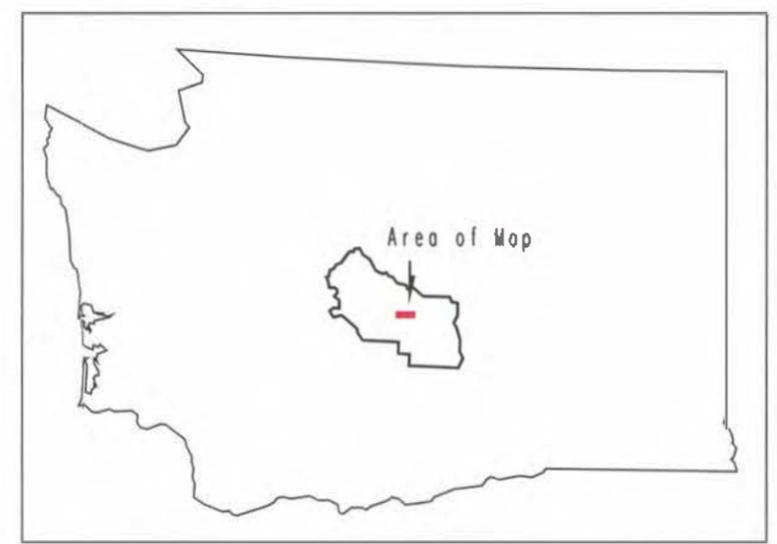
Legend

Paved Road	Pond or Reservoir	Stream Vegetation
Dirt Road	Irrigated Fields	Orchards
Section Boundaries	Non-Irrigated Fields	Trees
Surface Hydrology	Bedrock	Rangeland or Shrubs
BPA Transmission Lines	Residential	Rock Pit
Potential Substation Site		

NOTE: Alternate Sites 2 & 4 have been eliminated from consideration based on environmental and technical factors.

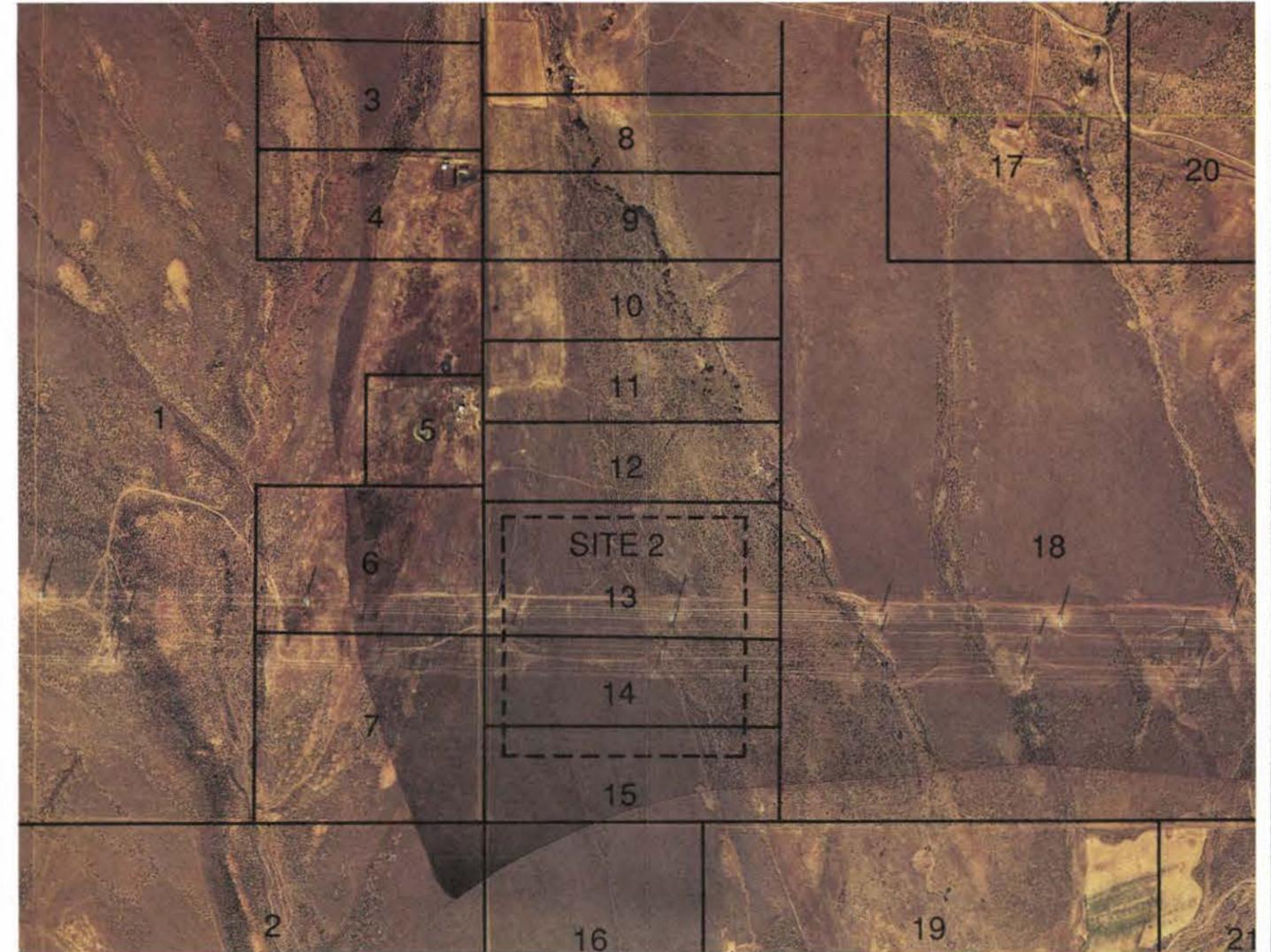
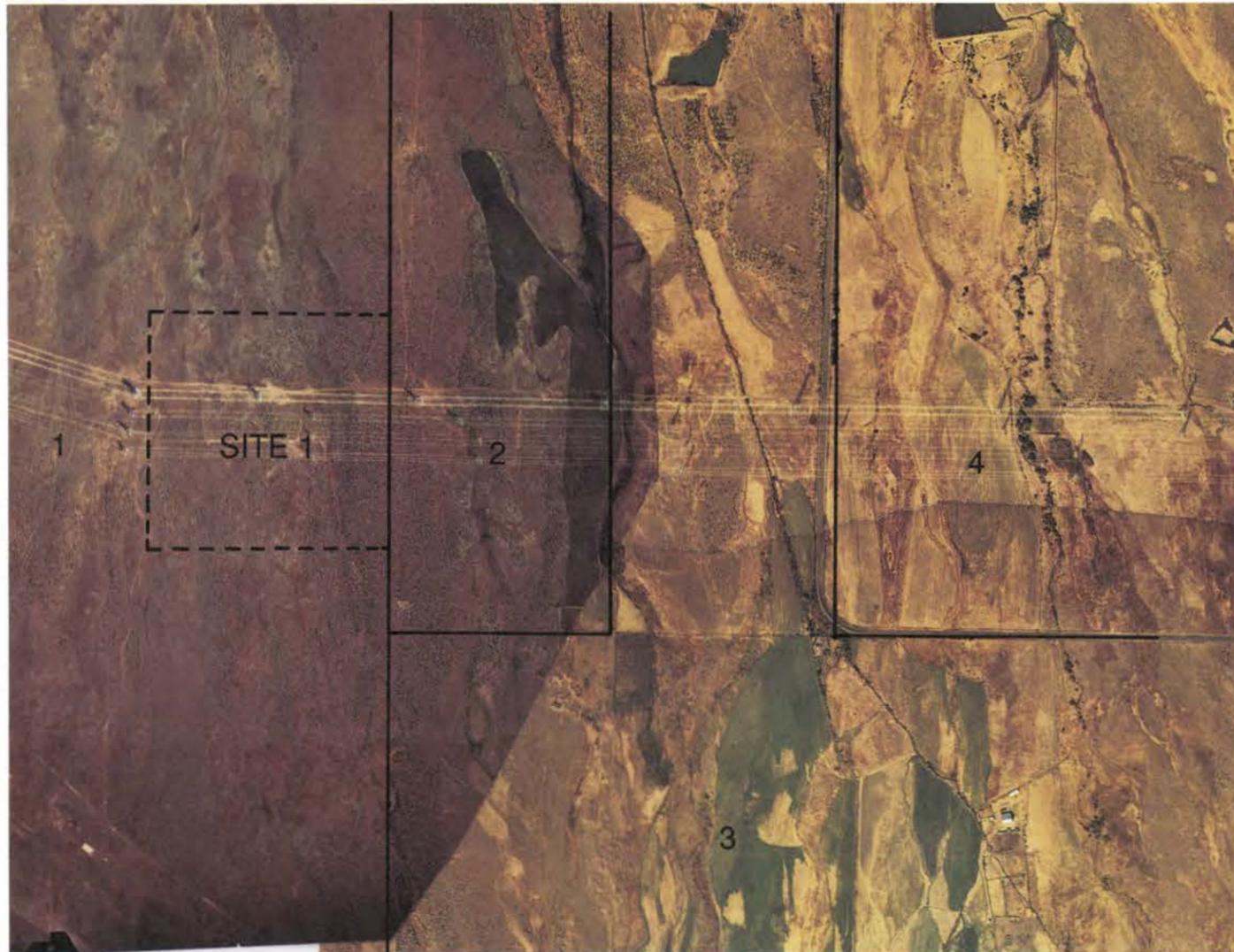


## Location Map





# NEW SUBSTATION SITING AREA - Kittitas County, Wa.



## PROPERTY OWNERSHIP LEGEND

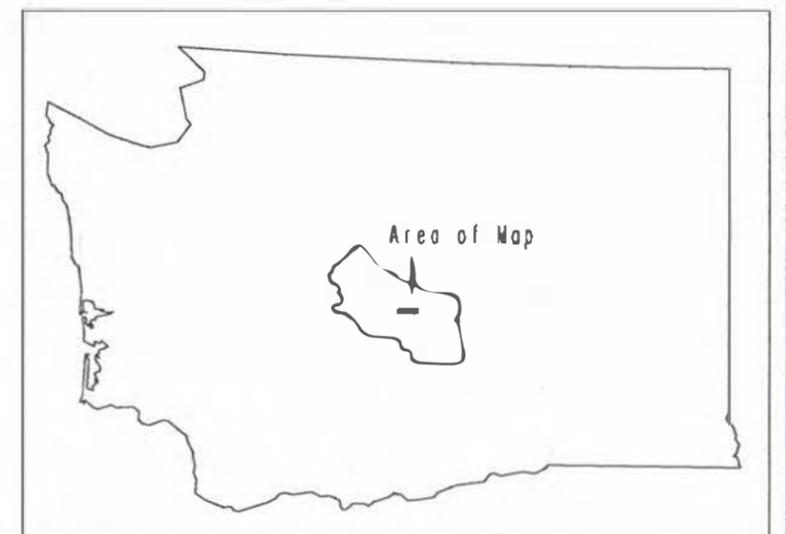
**SITE 1**  
 LAND PARCEL 1 - PAT BURKE  
 LAND PARCEL 2 - JACK B. WHITE  
 LAND PARCEL 3 - JACOB B. WHITE  
 LAND PARCEL 4 - FEDERAL HOUSING  
 AUTHORITY

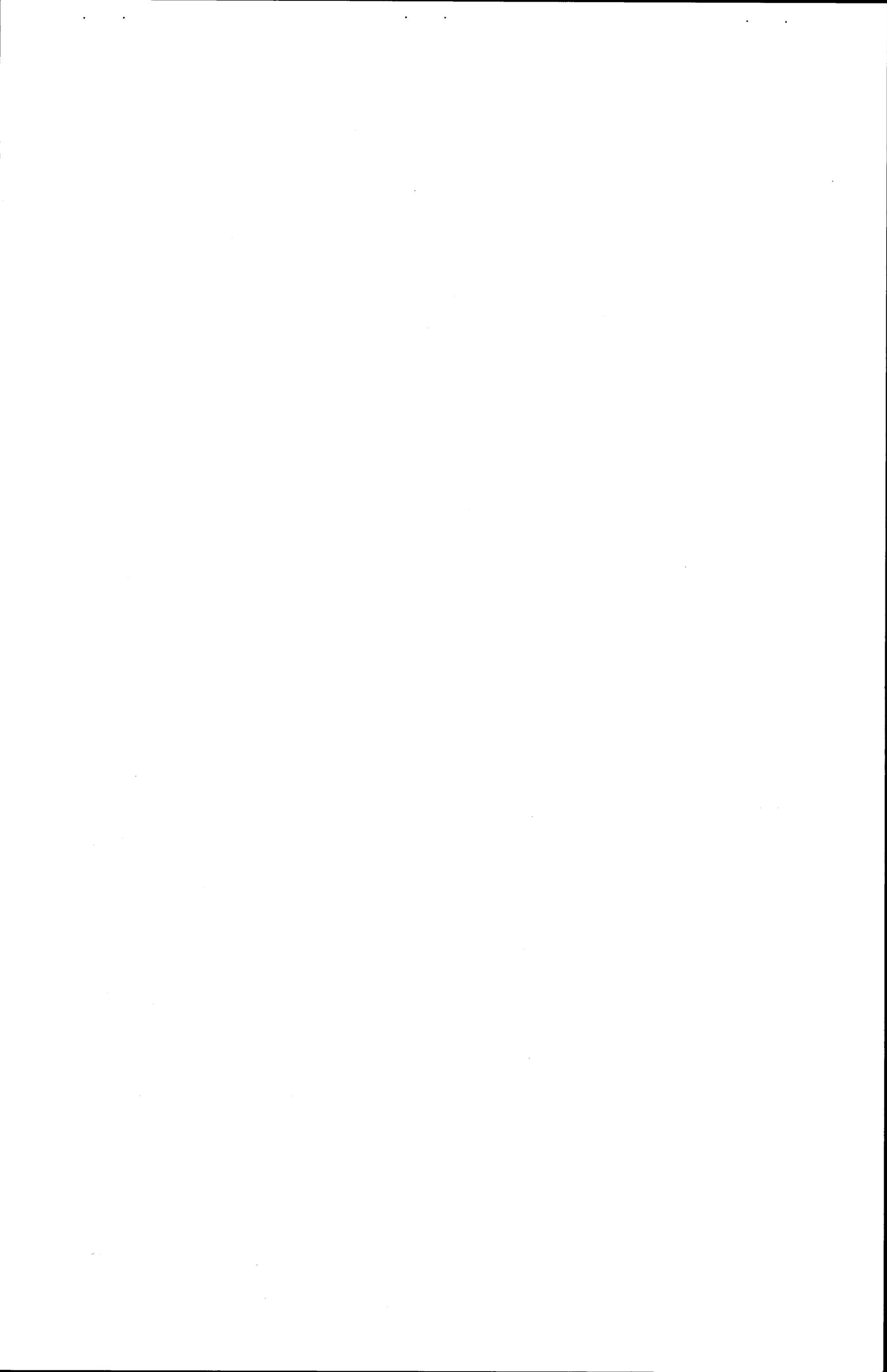
**SITE 2**  
 LAND PARCEL 1 - KURT A. LINDER  
 LAND PARCEL 2 - JAMES E. NELSON  
 LAND PARCEL 3 - HARRAL S. TENNEY  
 LAND PARCEL 4 - MICHAEL T. HOSKER  
 LAND PARCEL 5 - ARTHUR J. MANZ  
 LAND PARCEL 6 - HAROLD M. YAFUSON  
 LAND PARCEL 7 - DONALD J.  
 MCLAUGHLIN  
 LAND PARCEL 8 - ROBERT J. HECKMAN  
 LAND PARCEL 9 - ROY R. MARZAND  
 LAND PARCEL 10 - THOMAS M. DILLON

NOTE: Alternate Sites 2 & 4 have been eliminated from consideration based on environmental and technical factors.

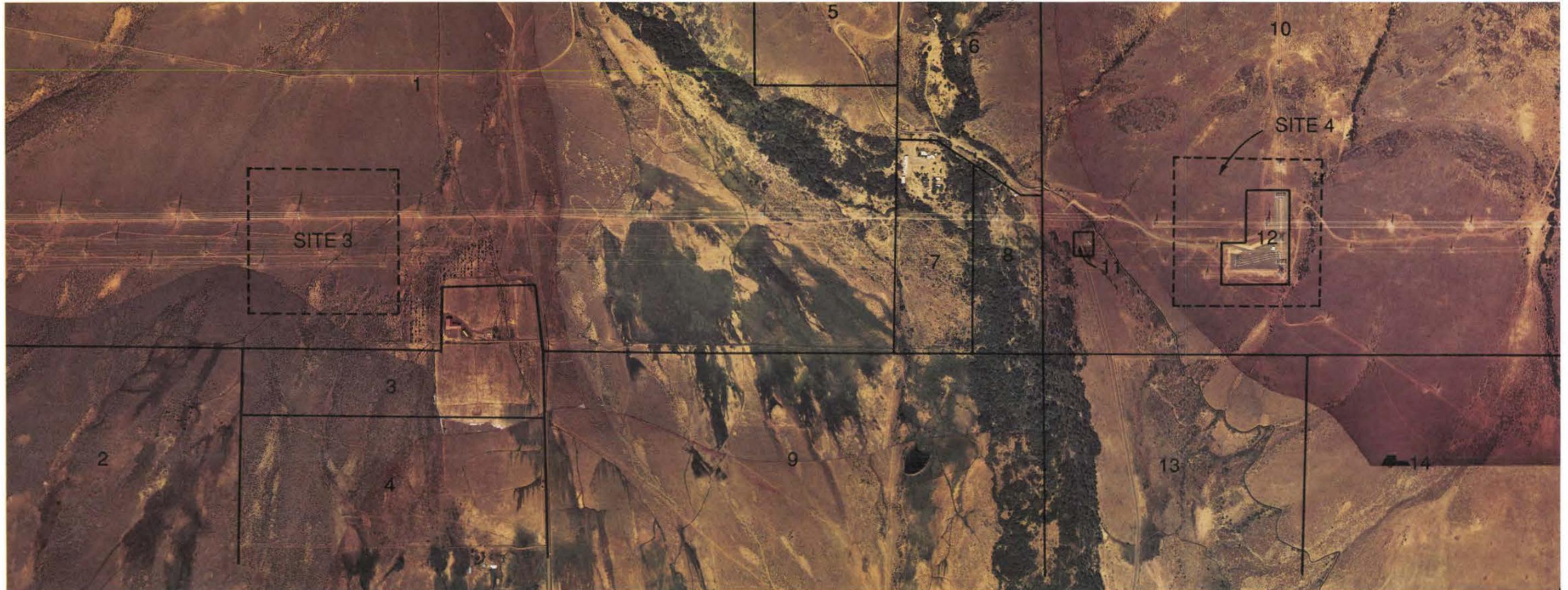
LAND PARCEL 11 - GARY L. BROWN  
 LAND PARCEL 12 - STEPHEN J. WARD  
 LAND PARCEL 13 - MICHAEL B. TILLMAN  
 LAND PARCEL 14 - WENDELL A. PETERSON  
 LAND PARCEL 15 - ANIELLA A. EARLY  
 LAND PARCEL 16 - STATE OF WASHINGTON  
 LAND PARCEL 17 - DENNIS A. ROMPPPEL  
 LAND PARCEL 18 - GEORGE A. REID  
 LAND PARCEL 19 - MILTON FEMERITE  
 LAND PARCEL 20 - GLENN W. MURPHY  
 LAND PARCEL 21 - STATE OF WASHINGTON

Location Map





# NEW SUBSTATION SITING AREA - Kittitas County, Wa.



## PROPERTY OWNERSHIP LEGEND

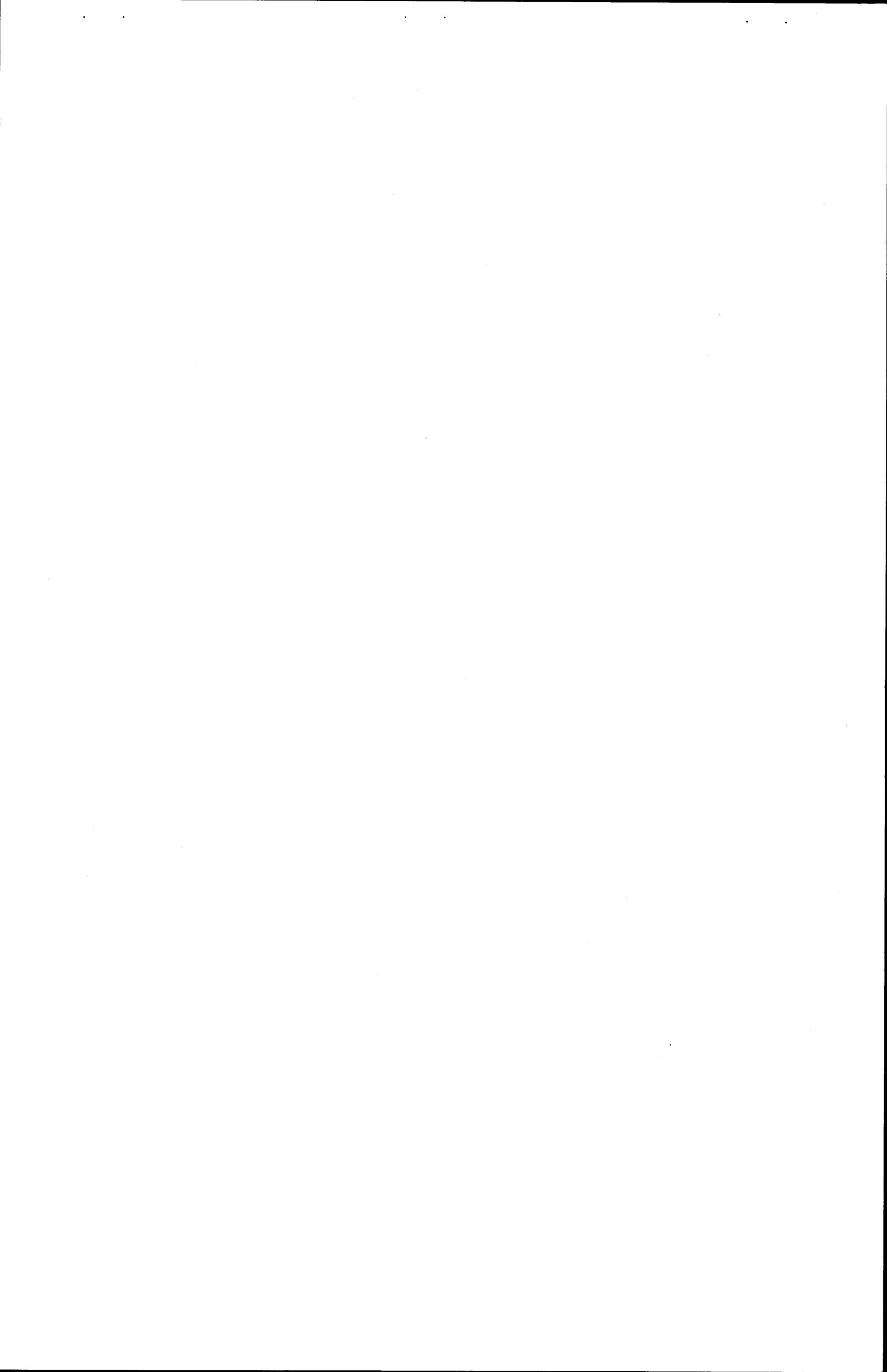
LAND PARCEL 1 - LORNE T. DUNNING, JR.  
 LAND PARCEL 2 - BERTHA MORRISON  
 LAND PARCEL 3 - MARILYN J. WILKINSON  
 LAND PARCEL 4 - WALLACE M. STAMPELY  
 LAND PARCEL 5 - RALPH G. CHARLTON, JR.  
 LAND PARCEL 6 - CITY OF ELLENSBURG  
 LAND PARCEL 7 - LEMOYNE HENDERSON

LAND PARCEL 8 - JAMES HENDERSON  
 LAND PARCEL 9 - JEANNE MARIE DUNNING  
 LAND PARCEL 10 - RALPH G. CHARLTON  
 LAND PARCEL 11 - KITTITAS CO. PUD #1  
 LAND PARCEL 12 - BONNEVILLE POWER  
 ADMINISTRATION  
 LAND PARCEL 13 - IDA MASON ARONICA  
 LAND PARCEL 14 - JAMES HENDERSON

NOTE: Alternate Sites 2 & 4 have been eliminated from consideration based on environmental and technical factors.

Location Map





important to large number of wildlife species. including small numbers of waterfowl and furbearers. Riparian areas and surrounding sage, bitterbrush and bunch grasses provide forage, cover and winter range for deer and elk. Cropland and grass/brush habitats support upland game birds, raptors, and song birds. Upland game birds in the study area are: ring-necked pheasant, valley quail, Hungarian partridge and mourning dove. A wide variety of song birds occur in these habitats, with populations varying greatly by season.

BPA has consulted with the U.S. Fish and Wildlife Service pursuant to the Endangered Species Act. Listed species which may occur in the study area include the Bald eagle which may winter in the study area from October through March, and that the Northern spotted owl. BPA completed a biological assessment which concluded there would be "no effect" on listed species. The U.S. Fish and Wildlife Service concurred with this finding.

## SOILS

Information on soils of the study area come from 1937 soil surveys by the U. S. Department of Agriculture, and consultation with State of Washington and U.S. Soil Conservation Service staff. Soil Conservation Service staff are in the process of updating the soil survey of 1937.

BPA geotechnical staff have indicated that the four alternate sites are located on water deposited soils. Test excavations at site three revealed silty and clayey sands mixed with gravel, cobble and boulder size rock, to at least 16-foot depth. No bedrock was encountered at Site 3, however there are occasional rock outcrops in the study area.

Slopes on Sites 1 - 3 are slight (see Map 6 - Slopes.) As indicated previously the slopes at Site 4 preclude it from consideration as a viable site for the Schultz Substation. The scrubby growth of bunchgrass and sagebrush growing in the area generally indicates low soil fertility, however one resident of Sun East reports a two-foot layer of deposited topsoil at Site 2, and good soil productivity when irrigated. Soil erosion is generally accelerated by overgrazing rangeland and cultivation.

## WATER RESOURCES

Annual precipitation in the study area is approximately 15 inches and generally occurs in December and January as snowfall and spring rains in June. The primary water features of the study area are Wilson and Naneum creeks. As can be seen by reviewing the maps enclosed, numerous intermittent creeks and canals also traverse the study area in a generally north-south alignment. These water features join the Yakima River.

Surface waters of the study area are used for irrigation. Given the area's semi-arid climate, water resources are important to the area's economy. Even though there are no wells on record for alternate Sites 1 and 3, wells recorded in the study area vary considerably in depth (110'-513') as does depth to static water (45'-373').

## 4.0 ENVIRONMENTAL CONSEQUENCES

### LAND USE IMPACTS

The site selected for the Schultz Substation will be purchased in fee by Bonneville Power Administration. The site will be graded to form a level land surface on which electrical equipment will be installed. A security fence is built around the substation. Current land uses will be replaced on the acreage developed as a substation. As indicated previously, a buffer zone of several hundred feet will be acquired beyond the actual substation. While a site as large as 130 acres would be purchased, only about 50 acres would be occupied by substation facilities. Additional acreage would be occupied by the maintenance complex. Acreage acquired but not initially developed is normally permitted to retain its prior use (livestock grazing in this instance).

Land use impacts attributed to the Schultz Substation are expected to be minimal or low in magnitude. This is partly due to the fact that Sites 1 and 3 are centered on a 700 foot wide transmission line right-of-way, and within areas currently used as rangeland. Approximately one-half of the needed substation acreage is already serving a utility function and uses permissible on the right-of-way are already limited. For example, homes or similar structures are not allowed on the right-of-way.

The land use that would be preempted if either site 1 or 3 is selected is rangeland. Rangeland in the area typically is low in productivity and abundant in supply. The land use impact of a 50 acre loss in rangeland is considered minimal. Grazing could continue in areas outside the substation fence.

Indirect impacts on land uses can occur due to adjacency effects. For example, if a residence or recreational site is visually exposed to the substation (an industrial looking development) this would constitute an indirect impact. Ranch homes and rural residences are sparsely scattered throughout the area.

For Site 1, no residences occur within a distance of one mile. While the proposed substation may be partly visible from these residences, transmission towers in the corridor have previously impacted views. Minimal change beyond that already existent is predicted.

Land use impacts were one reason Site 2 was eliminated from consideration. It would have required acquisition of three or more subdivided lots, and would have been within close proximity to about 20 year-around family residences.

Site 3 is about 2000' from one residence. Access to the substation site is beyond the entrance to this home and a large barn on the property blocks view of the substation site. Again given the presence of the transmission line and view blockage by the barn, indirect impact on the this residence would be low in magnitude.

Site 4, the Naneum Substation site is not suitable due to steep slopes. Equipment at Naneum will be removed once the Schultz Substation is completed.

The substation would have no impact on commercial land use, industrial land use, or forest lands.

## **WETLAND IMPACTS**

None of the sites under consideration for the proposed substation would impact wetlands ( See Map 5 - Wetlands.) Sites 1 and 3 are distant from water features, and neither possess soil qualities or vegetation species indicative of wetlands. Site 2 is near Currier Creek (which has a wetland designation) has been eliminated from consideration. The above conclusions are based upon the U.S. Fish and Wildlife Service wetlands inventory, and field reconnaissance by BPA environmental staff.

Two unnamed intermittent streams cross the likely route of the substation entrance road to Site 1. A narrow strip of land along these drainages (we estimate 10-feet based on field review) is classified as wetland on the U.S. Fish & Wildlife Service inventory. The route of the entrance road follows an existing transmission line access road. Steel culverts were installed in the road allowing vehicles to pass over the drainages. If Site 1 is selected, this road would be upgraded. New culverts and a wider road surface (20') would likely be installed. The quantity of fill anticipated, and the size of the area involved would be sufficiently small, to be permitted under Nationwide Permit 26 granted in Section 404 of the Clean Water Act. A similar condition occurs on the substation entrance road to Site 3 which crosses an irrigation ditch. This ditch is not classified as a wetland in the U.S. Fish and Wildlife Inventory.

## **FISH IMPACTS**

The alternative sites are located far enough from Naneum, Wilson and Reecer Creeks, that no fish impacts are expected.

## **WILDLIFE IMPACTS**

Sites under consideration for Schultz Substation are far from riparian zones, the most important wildlife habitat type in the area. Small numbers of upland animals now occupying the substation sites would be displaced and adjacent populations temporarily disturbed during construction. A low level of impact to wildlife is predicted.

Consultation with the U.S. Fish and Wildlife Service to determine if rare and or endangered wildlife species are known to occupy the area has been completed. BPA's biological assessment reached a conclusion of no effect to listed species. The U.S. Fish and Wildlife Service has concurred with this finding.

## **VEGETATION IMPACTS**

The new substation would remove 50 acres of rangeland vegetation and a crushed rock surface would be installed. No vegetation is permitted to grow within the substation to minimize fire hazards. Herbicides are routinely applied to the substation surface to control vegetation growth. Only Federally approved herbicides are used and applications are made by licensed applicators. As the involved vegetation types are common throughout the area, and the amount lost is small, a low impact to vegetation is predicted. A noxious weed survey of the area has been conducted, and appropriate measures to prevent introduction and distribution of noxious weeds will be followed during construction, operation and maintenance of the substation. No noxious weed impacts are expected.

## **WATER, SOIL, AND GROUNDWATER IMPACTS**

Low or minimal impacts to water, soil and groundwater are expected. The oil used in series capacitors and the station service transformer will not contain PCB's and will be of small volume. However if oil is accidentally spilled it could contaminate the soil, and groundwater. Small spills will be cleaned up in accordance with BPA's Spill Prevention Control and Countermeasures Plan. To protect soils and ground water from contamination, oil collection membranes would be installed beneath equipment containing large volumes of oil.

The proposed substation sites are far enough from Naneum, Wilson, Currier, Reecer and Canyon Creeks, and irrigation canals that no impacts to surface water features are expected.

The water well will be designed and constructed to meet Washington State standards. Water quality from the well will be routinely tested and reported in accordance with Federal and Washington safe drinking water standards.

## **CULTURAL RESOURCE IMPACTS**

Consultation with the Washington State Historic Preservation Office revealed no National Register or eligible sites in the siting area for Schultz Substation. Hence, no or minimal impacts to cultural resources are expected. BPA routinely contracts for archaeological surveys of proposed substation sites, to assure that unknown cultural resources are not inadvertently impacted. An intensive cultural resource survey of Site 3, was conducted for BPA by Eastern Washington University. The site and the intended route of the access road were surveyed. No cultural resources were found.

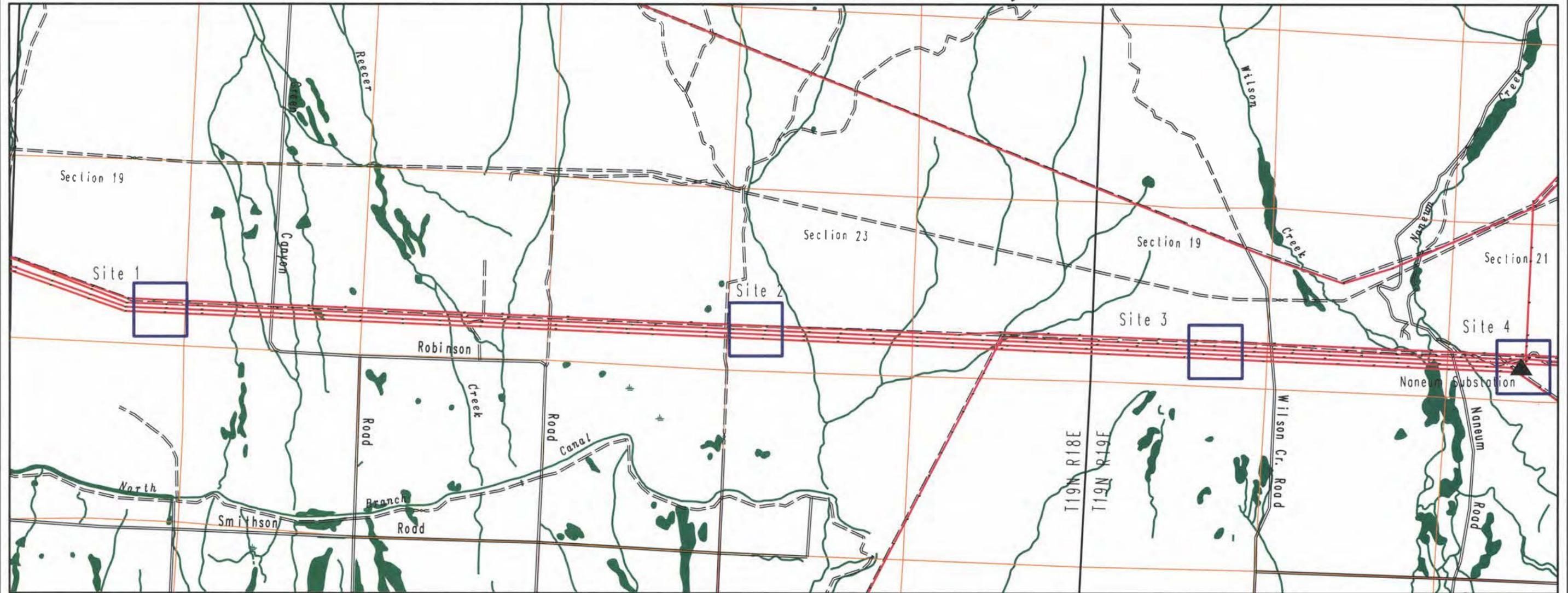
## **AESTHETIC IMPACTS**

Visual impacts created by the proposed substation would be low. Sites 1 and 3 are about 10 miles from Ellensburg and major transportation routes. A good indicator of potential impact is BPA's existing Gas Insulated Cable site called Naneum, which is near the proposed sites. The Naneum site is not visible from Ellensburg or from nearby highways, and it occupies a higher elevation than the sites under consideration for the proposed substation. Several ridges and knolls lie between Ellensburg and the proposed sites, further restricting views. Views from the few scattered ranches and rural homes near sites 1 and 3 will be impacted by Schultz Substation. In these instances the existing transmission line corridor already impacts visual conditions hence the added impact of the substation is considered low. The Naneum Substation will be retired once the Schultz Substation is energized. This will constitute a beneficial visual change to rural residents near the existing substation.

## **NOISE IMPACTS**

Construction creates short-term noise. The substation will create no noise exceeding that now created by the transmission lines. No significant noise effects are expected. The substation will comply with the Federal and Washington State Noise Standards.

# NEW SUBSTATION SITING AREA - Kittitas County, Wa.



## Wetlands

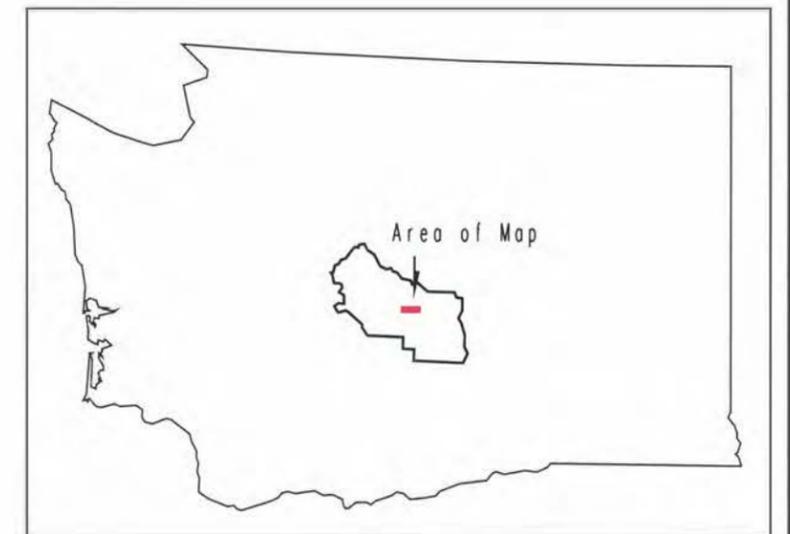
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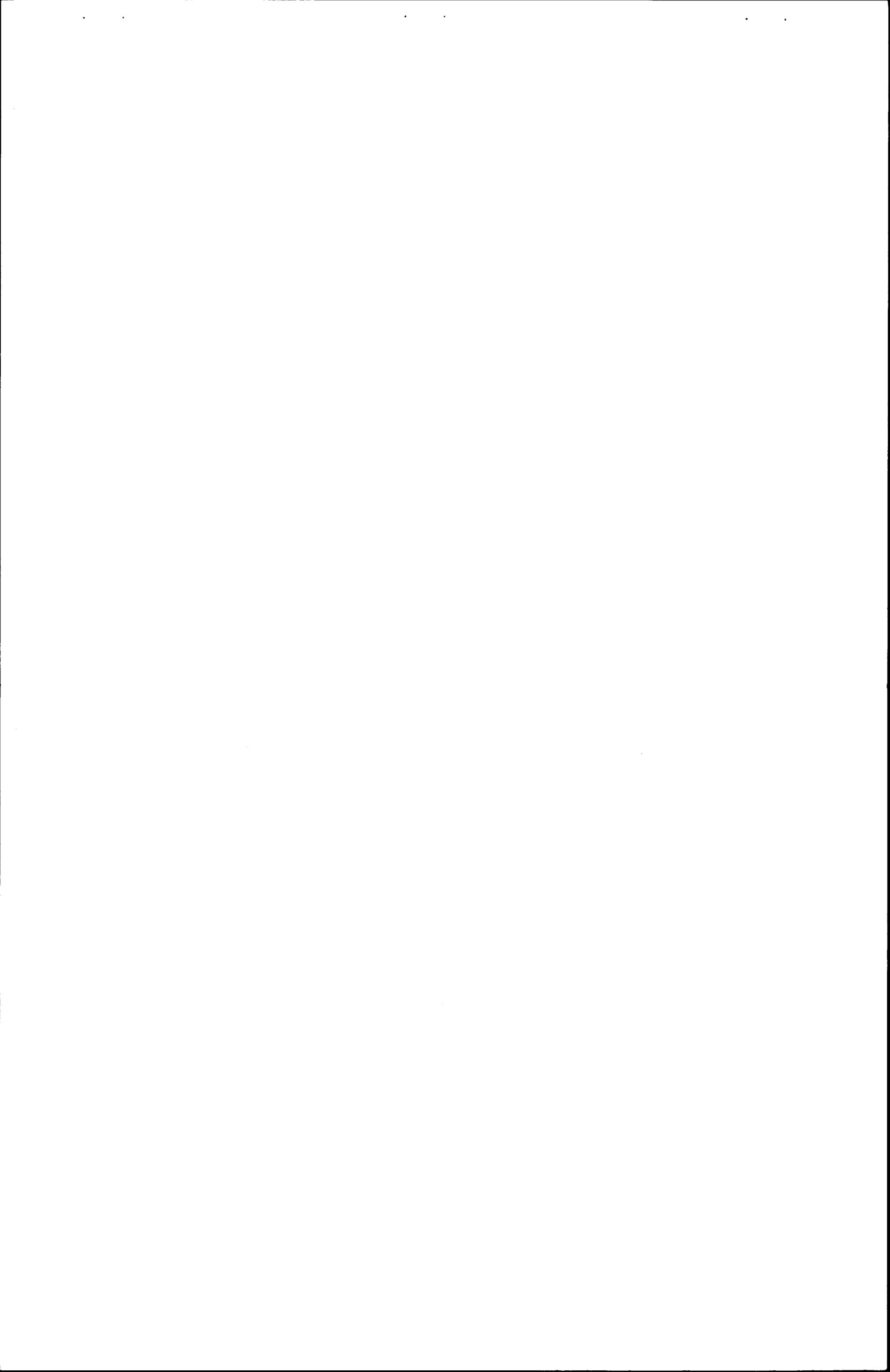
- Paved Road
- Dirt Road
- Section Boundaries
- BPA Transmission Lines
- Potential Substation Site
- Linear Wetlands (N.W.I)
- Wetlands Polygons (N.W.I)
- Wetlands < 0.5 Acres

NOTE: Alternate Sites 2 & 4 have been eliminated from consideration based on environmental and technical factors.

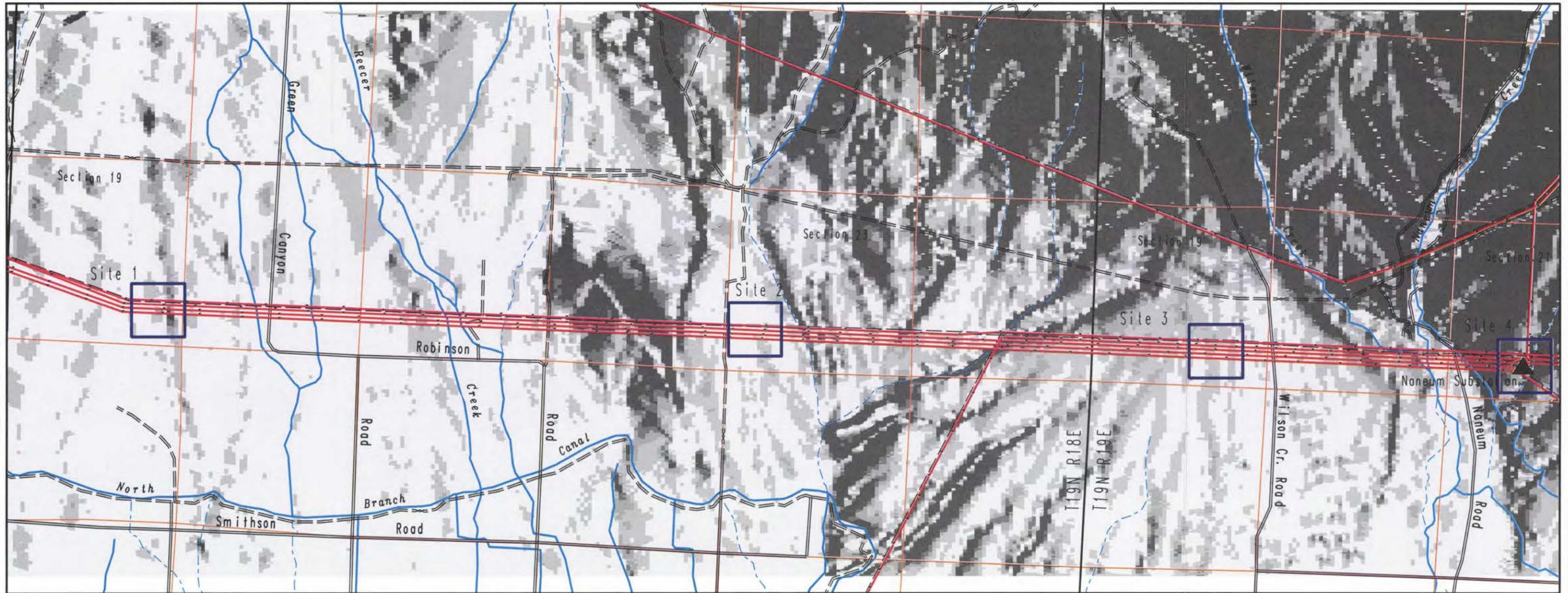


## Location Map





# NEW SUBSTATION SITING AREA - Kittitas County, Wa.



## Percent Slope

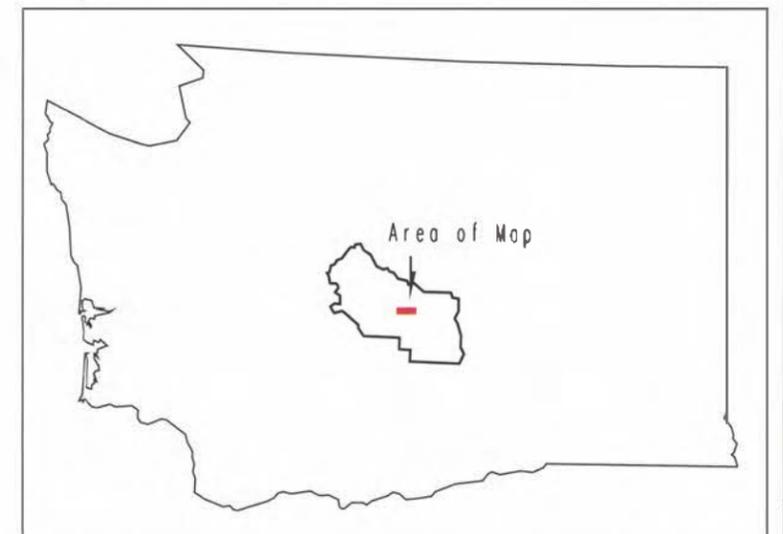
### Legend

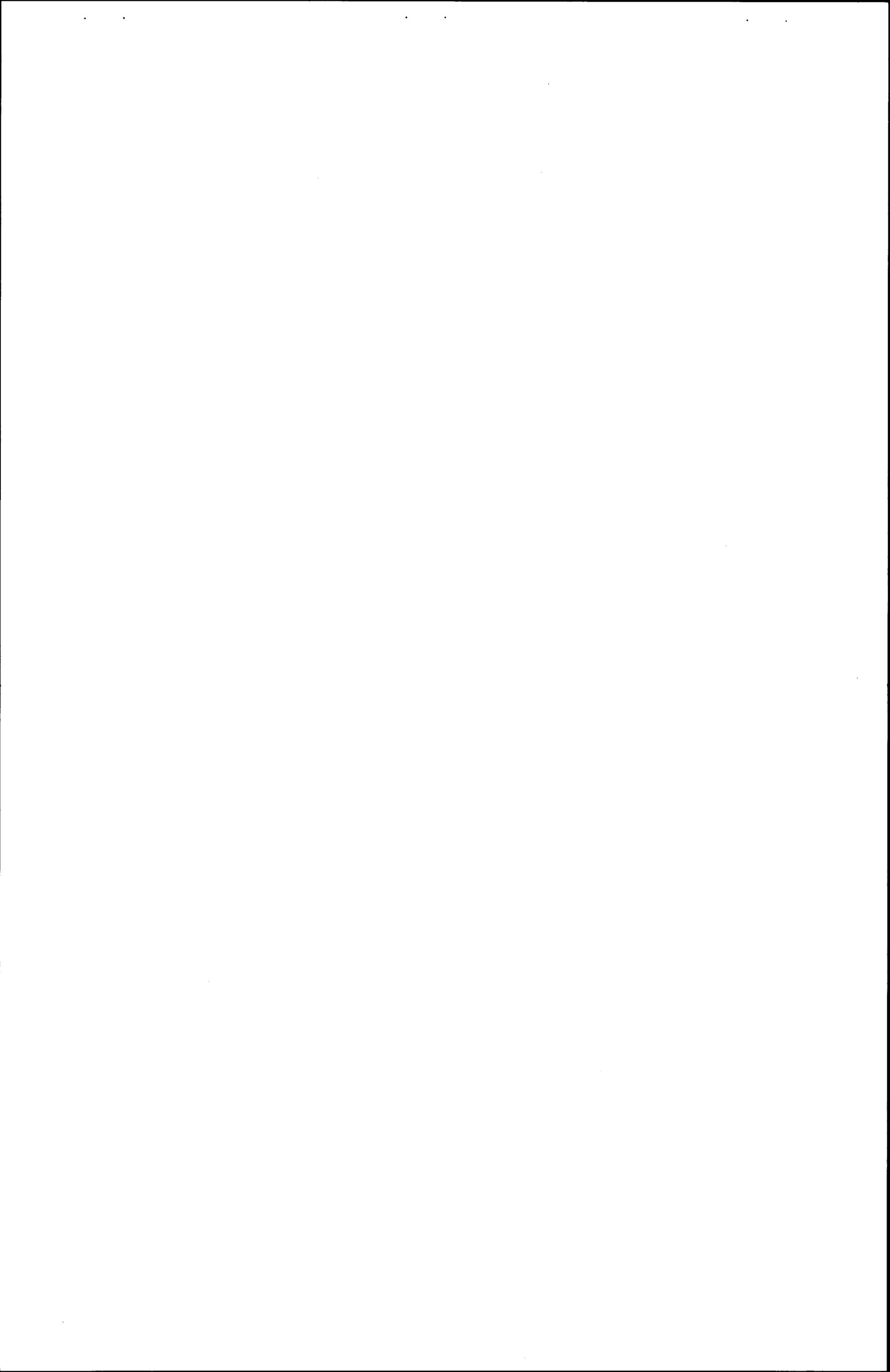
	Paved Road		0% - 5%
	Dirt Road		5% - 10%
	Section Boundaries		10% - 15%
	Surface Hydrology		15% - 20%
	BPA Transmission Lines		> 20%
	Potential Substation Site		

NOTE: Alternate Sites 2 & 4 have been eliminated from consideration based on environmental and technical factors.



## Location Map





## HEALTH AND SAFETY IMPACTS

This section discusses the possible effects of the electrical properties of transmission lines on public health and safety. These effects include electric shocks and potential long-term health effects.

**Safety Precautions** - Powerlines, as with electrical wiring, can cause serious electric shocks if certain precautions are not taken. These precautions include building the lines to minimize the shock hazard. All BPA lines are designed and constructed in accordance with the National Electrical Safety Code (NESC). NESC specifies the minimum allowable distances between the lines and the ground or other objects. These requirements basically determine the edge of the right-of-way and the height of the line, i.e., the closest point that houses, other buildings, and vehicles are allowed to the line, to limit electric field effects to acceptable levels.

People must also take certain precautions when working or playing near powerlines. It is extremely important that a person not bring anything, such as a TV antenna or irrigation pipe, too close to the lines. BPA provides a free booklet that describes safety precautions for people who live or work near transmission lines. It is entitled, "Living and Working Around High Voltage Power Lines."

Transmission lines can also induce voltages into objects near the lines. This effect can lead to nuisance shocks if a voltage is induced on something like wire fencing which is on wood posts and, therefore, insulated from ground. Usually, however, this becomes a problem only with lines of voltages above 230-kV. Should problems develop with either high- or low-voltage lines, they can be corrected by simple grounding techniques. For 500-kV lines, grounding of certain objects near the lines is a routine part of the construction process.

**Electric and Magnetic Fields** - Powerlines, like all electrical devices and equipment, produce electric fields and magnetic fields. Current (movement of electrons in a wire) produces the magnetic field. Voltage (the force that drives the current) is the source of the electric field. The strength of these fields also depends on the design of the line and on distance from the line. Field strength decreases rapidly with this distance.

Electric and magnetic fields are found around any electrical wiring, including household wiring and electrical appliances and equipment. Throughout a home, the electric field strength from wiring and appliances is typically less than 0.01 kilovolts per meter (kV/m). However, fields of 0.1 kV/m and higher can be found very close to electrical appliances.

Average magnetic field strength in the home from wiring and electrical appliances is typically less than 1 milligauss (mG). Very close to appliances carrying high current, fields of tens or hundreds of milligauss are present. Unlike electric fields, magnetic fields from outside powerlines are not reduced in strength by trees and building material. So, powerlines can be the major source of magnetic field exposure throughout a home located close to the line. There are no national standards for electric or magnetic fields.

Both electric and magnetic alternating-current (a-c) fields induce currents in conducting objects, including people and animals. These currents, even from the largest powerlines, are too weak to be felt. However, some scientists believe that these currents might be potentially harmful and that long-term exposure should be minimized. Dozens of research projects on electric and magnetic fields have been conducted in the U.S. and other countries. Studies of laboratory animals generally show that these fields have no obvious harmful effects. However, a number of subtle effects of unknown biological significance have been reported in some laboratory studies.

Much attention at present is focused on several recent reports suggesting that workers in certain electrical occupations and children living close to power lines have an increased risk of leukemia and other cancers. The evidence, however, has not established a cause-and-effect relationship between electric or magnetic fields and cancer.

Of the seven studies involving children, four reported that the cancer cases were around 1.5 to 3 times more likely to have lived near high current powerlines compared to the control children (those without cancer). The magnetic fields produced by the lines were suggested as possible factors influencing this finding. However, statistically significant associations with actual measured magnetic fields were generally not found in these studies.

A 1982 study in Washington state first reported that men in various "electrical occupations" had died more frequently from leukemia than men in other occupations. Several other studies reported similar findings suggesting an increased risk of around 20 to 50 percent. More recent studies have also reported increased risks for brain tumors, and breast cancer in electrical workers. So far, the factor(s) responsible for these results have not been established.

The U.S. Environmental Protection Agency has initiated an extensive review of the research on EMF and cancer. A draft report by that agency is currently receiving extensive scientific review. To date, this review has not found evidence to show that EMF causes cancer in humans. It appears that several more years of research will be needed before questions raised about the possible health effects of EMF can be answered.

Because of scientific uncertainty, and increasing public concern, in 1988 BPA adopted guidance for addressing EMF concerns. For proposed new transmission projects, practical alternatives are evaluated that will avoid increasing EMF exposures of the public. Such alternatives include different transmission line designs, and locations that would avoid nearby residences. This approach will be used on this project.

More detailed information on the studies discussed above can be found in a publication available free from BPA. It is titled, "Electrical and Biological Effects of Transmission Lines: A Review."

**The New Substation** - Magnetic fields near substations are typically dominated by the lines entering and leaving the substation. Magnetic fields within the transmission corridor are constantly increasing and decreasing for a variety of reasons. If electric loads on a line increase, magnetic fields also increase. Magnetic fields are typically greatest in winter months when electrical demands are highest. Operational and line design factors also affect magnetic fields. EMF field strength predictions are thus difficult to make for they are very time and site-specific and are affected by so many different conditions. Despite these limitations it is possible to conclude that adding voltage support at the proposed substation will significantly change how electrical loads are distributed between transmission lines west of the substation. Quantitative estimates of magnetic fields at substation Site 3 and within the transmission corridor west of the site are shown below. These estimates are based on expected line loadings for the year 2004, which is the end of the planning period for this project. Magnetic fields east of Schultz Substation will not change significantly. A graphical diagram of magnetic field changes is also provided.

Location	Magnetic Field(milligauss)				Electric Field <sup>2</sup> (kV/meter)
	Without Substation		With Substation		
	Average	Peak <sup>1</sup>	Average	Peak <sup>1</sup>	
500 ft. North of ROW	1	3	2.0	4	.07
300 ft. North of ROW	3	5	4	8	.13
100 ft. North of ROW	7	15	11	22	.32
North Edge of ROW	16	32	24	49	.49
Maximum on ROW	92	184	140	280	7.49
South Edge of ROW	25	50	14	29	1.84
100 ft. South of ROW	7	14	4	8	.24
300 ft. South of ROW	2	4	2	3	.03
500 ft. South of ROW	1	2	1	2	.02

<sup>1</sup> will occur less than 1% of the time

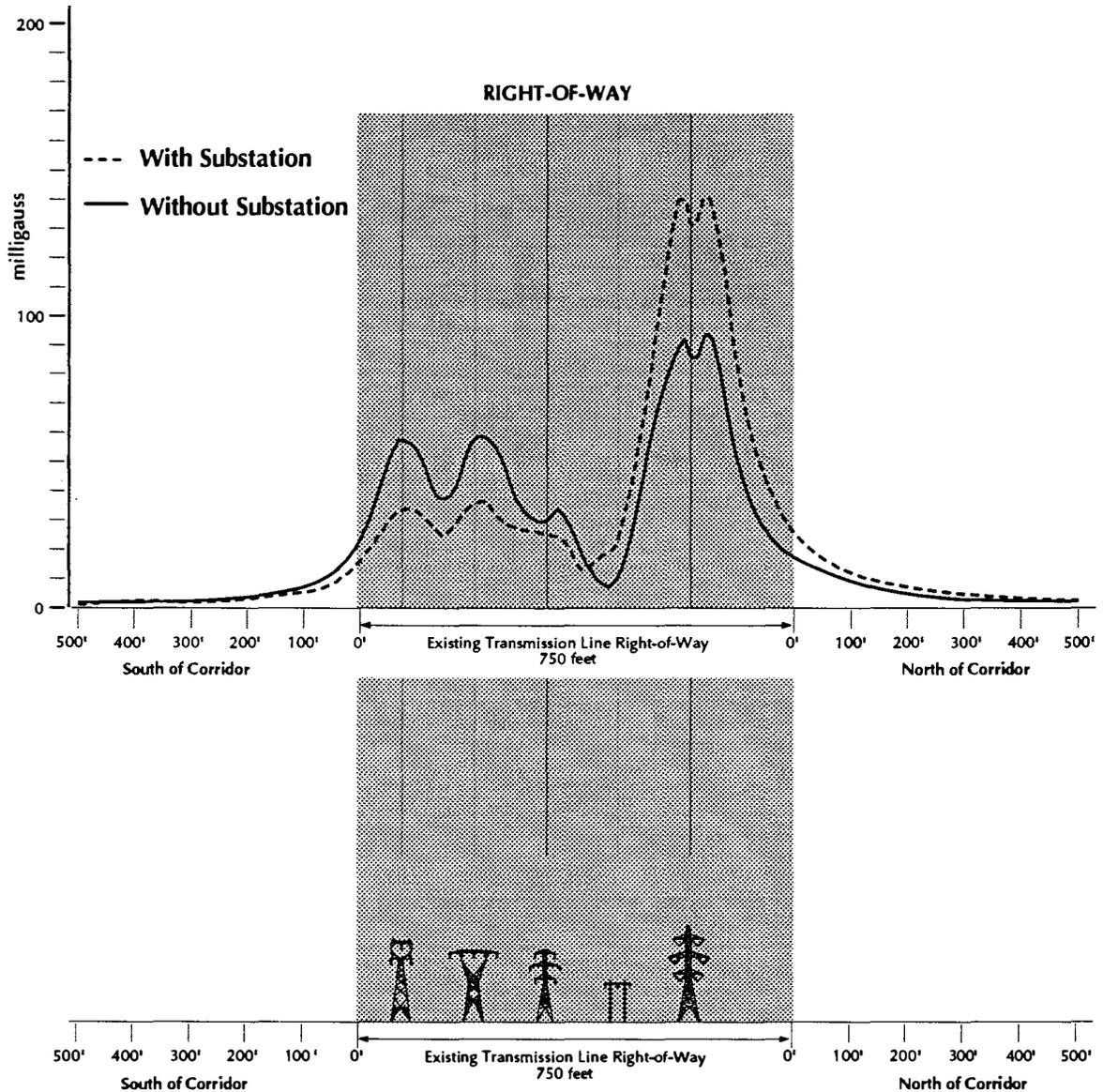
<sup>2</sup> With or without Substation

**Assumptions:**

- Lines in and out of station are major contributors to EMF levels
- Peak current data for 2004 (system normal winter peak)
- Average annual loads estimated at 50% of winter peak

The table and diagram illustrate that there will be changes in the magnetic field environment. Overall, maximum levels do not change at the edge of the right-of-way, however magnetic field levels at the southern edge of the right-of-way decrease while fields at the northern edge of the right-of-way increase. Fields levels under the heading Peak are the maximum fields expected to occur. Peak loads will occur less than 1% of the time. Fields levels under the column titled Average Loads heading represent the condition most likely to be encountered. The EMF levels that will result are within the normal range for transmission lines. The substation will not change EMF exposures at any existing residences in the vicinity of Schultz Substation. Electric field levels shown above are for maximum system operating voltages which generally occur under light load conditions. System voltages are maintained in a very narrow band so electric field levels are nearly constant over time. The new substation will have negligible effects on electric field levels.

# MAGNETIC FIELD COMPARISON AVERAGE LOADS



## SOCIO-ECONOMIC IMPACTS

Constructing the substation would employ at most 30 construction workers from outside the immediate area of the project. The duration of construction is expected to be two years. Workers from outside the area are not expected to bring dependents. Workers from outside the area would likely stay in motels/hotels or rent an apartment for the short time they are in the area. Given the small number of the construction force compared with the population of the area there would be no need for additional housing or community services.

Construction of the project would have a low impact on area employment, unemployment and income distribution. Some people would be hired locally to fill short-term jobs, but this number would be small compared to the total local labor force.

The increased workload imposed by Schultz Substation, requires added operations and maintenance staff in the Ellensburg area. A substation maintenance crew will be added at the substation. This crew would service Schultz Substation and several other nearby substations. System Protection and Maintenance staff and substation operators may be added. Total new staffing in the Ellensburg area is expected to be 6-10 people.

The new substation will lead to a long-term employment increase of 6-10 jobs in the Ellensburg area. Some of the new employees will already reside in the area, while others will relocate from elsewhere. The net population increase will be insignificant given the normal rate of population turnover expected for a town the size of Ellensburg.

A total annual disposable income of about \$300,000 will be generated by the 6-10 new jobs. Assuming that 2/3 of the disposable income would be spent locally, a small but beneficial affect on the local economy is predicted.

BPA will purchase a substation site approaching 130-acres in size. The property owner would be compensated for the market value of the property and thus no economic impact to property owners is predicted. BPA, a federal agency is exempt from paying property taxes. The sites under consideration are rangelands and yield relatively small tax revenues, thus tax impact to the Kittitas County tax base will be minimal.

## **MITIGATION**

Relatively few environmental impacts requiring mitigation were revealed at the proposed substation site (Site 3). Local agencies and interest groups will be encouraged to suggest means to reduce environmental impacts. Construction activities would be scheduled so as to not interfere with adjoining property uses. Fill materials used to achieve a relatively flat substation site, would be obtained from an environmentally approved site. Disturbed sites would be seeded to control erosion. Construction debris would be disposed at an approved landfill. If cultural resources are discovered during construction of the substation, the Washington State Historic Preservation Office would be notified and all work in the vicinity would be suspended until appropriate protective actions were completed.

## **5.0 ENVIRONMENTAL CONSULTATION, REVIEW, AND PERMIT REQUIREMENTS**

Several Federal & State environmental statues, Executive Orders and other administrative mandates must be met at Schultz Substation. The following paragraphs describe what BPA has done and must due to comply with these requirements. If a statute does not apply to Schultz Substation proposal, this also is explained.

### **NATIONAL ENVIRONMENTAL POLICY ACT**

This discussion was prepared according to NEPA (42 USC 4321 et seq.). The FEIS excerpts discussions from this supplemental review of Schultz Substation impacts, under the headings titled Preferred Strategy and Alternative Strategy 2 both of which refer to Schultz

Substation. BPA will take into account the potential environmental consequences and will take action to protect, restore, and enhance the environment.

## **ENDANGERED SPECIES**

The Endangered Species Act (16 USC 1536) provides for conserving endangered and threatened species of fish, wildlife and plants. Federal agencies must ensure proposed actions do not jeopardize the continued existence of any endangered or threatened species, or cause the destruction or adverse modification of their habitat.

A letter was sent to the U.S. Fish and Wildlife Service requesting a list of endangered and threatened species in the vicinity of the proposed substation. Listed species are the Bald eagle, which may winter in the area from October 1 through March 31, and the Northern spotted owl. A biological assessment of project impacts to these listed species has been completed by a BPA wildlife biologist and forwarded to U.S. Fish and Wildlife with a conclusion that the proposed Schultz Substation will have no effects on endangered and threatened species. The U.S. Fish and Wildlife Service concurred with BPA's finding of no effect in a letter dated March 16, 1992.

## **FISH AND WILDLIFE CONSERVATION**

The Fish and Wildlife Conservation Act of 1980 (16 USC 2901 et seq.) encourages Federal agencies to conserve and promote conservation of non-game fish and wildlife species and their habitats. The Northwest Power Planning Council's Protected Areas, intended to protect, mitigate, and enhance fish and wildlife of the Columbia River and its tributaries, are part of the screening criteria used to eliminate alternatives from this Plan. Other identified critical areas are precluded from development because it would cause significant adverse effects to fish and wildlife. The Fish and Wildlife Coordination Act (16 USC 661 et seq.) requires Federal agencies undertaking projects affecting water resources to consult with the U. S. Fish and Wildlife Service to conserve or improve wildlife resources. As projects are proposed, BPA will consult with the U.S. Fish and Wildlife Service to conserve and improve wildlife resources.

Water resources that promote fish and wildlife habitat have been identified in the Schultz Substation siting area. The location of alternate sites 1 & 3 are far enough away from water resources that they do not interfere with surface flow or riparian vegetation. The Washington Department of Wildlife has been contacted to determine if these site locations interfere with any upland wildlife habitat. No interference is anticipated.

## **HERITAGE CONSERVATION**

Congress has passed many Federal laws to protect the nation's historical, cultural, and prehistoric resources. These include the National Historic Preservation Act, the Archaeological Resources Protection Act, the American Indian Religious Freedom Act, the National Landmarks Program, and the World Heritage List. Preserving cultural resources allows Americans to have an understanding and appreciation of their origins and history. A cultural resource is an object, structure, building, site or district that provides irreplaceable evidence of natural or human history of national, state or local significance. Cultural resources include National Landmarks, Natural Landmarks, archaeological sites, and properties listed (or eligible for listing) on the National Register of Historic Places.

Construction projects such as Schultz Substation could affect historic properties and other

cultural resources. A consultation letter was sent to the Washington State Historic Preservation Office requesting a list of resources that are located in the substation siting area. Their response was "No National Register or eligible properties are known to exist within the are of the undertaking's potential environmental impact, but it is highly possible that the area contains undiscovered historic sites of potential significance. Therefore, a cultural resources field survey is required." On BPA's behalf, Eastern Washington University conducted a field survey of cultural resources at BPA's proposed site 3. No cultural resources were discovered. The Washington State Historic Preservation Office has been notified of the field survey and it's lack of findings.

## **STATE, AREA WIDE, AND LOCAL PLAN AND PROGRAM CONSISTENCY**

The Kittitas Planning Department was contacted regarding land use consistency for the proposed new substation. Siting of transmission facilities on Forest/Rangeland requires a plan amendment and a conditional-use permit. No conflict with state, area wide or local plans is anticipated.

## **FARMLAND PROTECTION**

The Farmland Protection Policy Act (7 USC 4201 et seq.) directs Federal agencies to identify and quantify adverse impacts of Federal programs on farmlands. The Act's purpose is to minimize the amount Federal programs contribute to unnecessary and irreversible conversion of agricultural land to non-agricultural uses. As individual projects or actions are proposed, local Soil Conservation Service maps will be used to decide whether any prime or unique farmland or additional land of local importance is affected.

A letter was sent to the Soil Conservation Service requesting review of the alternative sites with respect to prime agricultural land. Their response was that no prime agricultural lands occur near the proposed sites.

## **RECREATION RESOURCES**

Recreation resources are areas designated by the Wild and Scenic Rivers Act, the National Trails System Act, the Wilderness Act, or parklands, and other ecologically sensitive areas. These areas are not be affected by any of the alternative substation sites.

The Washington Department of Natural Resources was contacted regarding recreational use within the substation siting area. Hunting is very popular in the canyon areas surrounding Wilson and Naneum Creeks to the north of the siting area. The creek areas are a popular weekend destination for the people of Ellensburg. As potential sites are located away from creek habitats, no interference with recreational uses is anticipated.

## **FLOODPLAINS**

Floodplains are the lowlands adjoining inland and coastal waters, and flat areas and flood-prone areas of offshore islands. Under Executive Order 11988, floodplain development is discouraged whenever there is a practicable alternative. If specific projects are proposed that might cause development in a floodplain, alternatives to developing in the floodplain will be considered.

Inspection of floodplain maps reveal proposed locations for the Schultz Substation are far from both Wilson and Naneum Creeks, both of which flow through the siting area.

## **WETLANDS**

Areas inundated by surface or groundwater sufficient to support vegetative or aquatic life requiring saturated or seasonally saturated soil conditions for growth and reproduction are known as "wetlands." Examples include swamps, marshes, bogs, and similar areas such as sloughs, potholes, wet meadows, river overflow areas, and mudflats. Under Executive Order 11990, construction in wetlands is discouraged whenever there is a practicable alternative. For specific projects other regulations also may apply:

- Section 404 of the Clean Water Act
- Section 10 of the Rivers and Harbors Act of 1899
- National Environmental Policy Act
- Fish and Wildlife Coordination Act
- Emergency Wetlands Act of 1985
- state statutes

If a permit is needed for a specific project, permitting agencies must find that the project's public values exceed the resource's public values, and that there are no other practicable alternatives.

U.S. Fish and Wildlife maps were inspected for evidence of wetlands in the substation siting area. Wetlands of the study area are shown on Map 5. All wetlands are confined to areas bordering the creeks. Proposed Site 3 avoids wetlands. The substation entrance road for alternative Site 1 (now a transmission line access road) may cross intermittent streams along which are located designated wetlands. As an existing transmission line access road now crosses these intermittent streams, wetland impacts will be minimal.

## **GLOBAL WARMING**

No global warming impacts are expected as a result of Schultz Substation. Electrical heating and air-conditioning are planned for the control house and maintenance building. No gases attributed to global warming would be emitted by the substation.

## **COASTAL ZONE MANAGEMENT CONSISTENCY**

The Coastal Zone Management Act of 1972 requires federal actions be consistent, to the maximum extent practicable, with approved state Coastal Zone Management Programs. If proposed projects could affect the coastal zone, BPA will consult with the state and ensure consistency with state programs.

Proposed site locations for the substation are away from creeks located in the siting area and will not come under the jurisdiction of the Coastal Zone Management Act.

## **ENERGY CONSERVATION AT FEDERAL FACILITIES**

The control house and maintenance building at Schultz Substation will be designed to comply with energy conservation standards for federal facilities.

## **POLLUTION CONTROL AT FEDERAL FACILITIES**

Several pollution control acts apply to federal facilities. If this Plan leads to new federal facilities (Schultz Substation included), BPA will comply with the following statutes:

- Clean Air Act
- Resource Conservation and Recovery Act
- Toxic Substances Control Act
- Federal Insecticide, Fungicide and Rodenticide Act
- Noise Control Act

**Noise Control** - In Washington state, the Noise Control Act of 1974, amended by the 1987 legislature, gives authority to enforce noise codes to local governments. Operation of the Schultz Substation will comply with local noise standards.

**Federal Licensing and Permit Requirements for New Power Resources** - The new substation is not a new power resource thus none of the licensing and permit requirements for such facilities apply to the substation.

**Discharge Permits under the Clean Water Act** - The Clean Water Act (CWA) is the principal federal law governing water pollution control. The Act was passed in 1972 and amended in 1977 and 1987. It authorizes federal and state control of discharges into waters of the United States and municipal sewer systems. The septic waste disposal system installed at Schultz Substation will be located and designed to meet the standards of the State of Washington and Kittitas County.

**The Safe Drinking Water Act** - The water well to be constructed at the substation will be designed and constructed in accordance with State of Washington, and Kittitas County standards, which carry out provisions of the Safe Drinking Water Act.

## **PERMITS FROM THE ARMY CORPS OF ENGINEERS**

The U.S. Army Corps of Engineers administers several permit programs that may apply to certain new power resource projects.

**Rivers and Harbors Act** - A permit from the Corps is needed under Section 10 of the Rivers and Harbors Act of 1899 for constructing structures or work in or affecting navigable waters. Building electric power transmission lines across navigable waters would require a permit. No navigable waters occur near the substation sites thus no Section 10 permits are required.

**Clean Water Act** - Discharging dredged or fill materials into waters of the United States requires a permit from the Corps issued under the authority of Section 404 of the Clean Water Act. The term "waters of the United States" is defined very broadly and includes almost every surface body of water in the United States including wetlands. Permits are issued only after the state where the dredge or fill activity is to be located certifies under Section 401 of the CWA that existing water quality standards will not be violated if the permit is issued. Permits also must be consistent with the environmental guidelines established by EPA under Section 404(b) of the CWA. The EPA can veto permits authorized by the Corps if EPA finds that the discharge will have an unacceptable adverse effect on the environment.

A consultation letter was sent to the Corps of Engineers requesting that they review Schultz Substation project for permit requirements. They confirmed that a permit would be needed if dredge or fill activities occur in waters of the United States. As the proposed site and alternate Site 1, are far from these surface flows, a Section 404 permit will not be required.

### **GEOHERMAL RESOURCE DEVELOPMENT ON FEDERAL LANDS**

Several permits and approvals are needed to develop geothermal resources on federal lands under the Geothermal Steam Act of 1970. The proposed substation does not involve geothermal resources.

### **EASEMENT FOR TRANSMISSION LINES ACROSS FEDERAL LANDS**

Building an electric power transmission line across federally owned lands requires the approval of the federal agency administering the lands. The approval may be an easement, a right-of-way authorization, a lease, a special use authorization, or a permit. The alternative substation sites occupy private lands.

### **NOTICE TO THE FEDERAL AVIATION ADMINISTRATION**

Building certain tall facilities requires notice to the Federal Aviation Administration (FAA). Specifically, building any facility 200 ft. or more above ground level requires notice to the FAA. No structures exceeding 200 ft. are planned at Schultz Substation.

### **PERMITS UNDER THE RESOURCE CONSERVATION AND RECOVERY ACT**

The Resource Conservation and Recovery Act (RCRA), as amended, is designed to provide a program for managing and controlling hazardous waste by imposing requirements on generators and transporters of this waste, and on owners and operators of treatment, storage, and disposal (TSD) facilities. Each TSD facility owner or operator is required to have a permit issued by EPA or the state. Construction and maintenance activities in BPA's experience have generated small amounts of hazardous waste. These typically include: solvents, pesticides, paint products, motor and lubricating oils, and cleaners. Under EPA and Washington Department of Ecology regulations, the amounts of these wastes would fall within the definition for a "small quantity generator". BPA has a hazardous waste management program in place to assure compliance with Federal and State hazardous waste requirements.

## **6.0 SUMMARY**

Development of a new substation is expected to have low or minimal impacts. The following matrix summarizes the environmental differences between the alternative sites. BPA proposed to build Schultz Substation on Site 3, however Site 1 also has desirable qualities and is considered a second viable alternative should difficulties arise on Site 3.

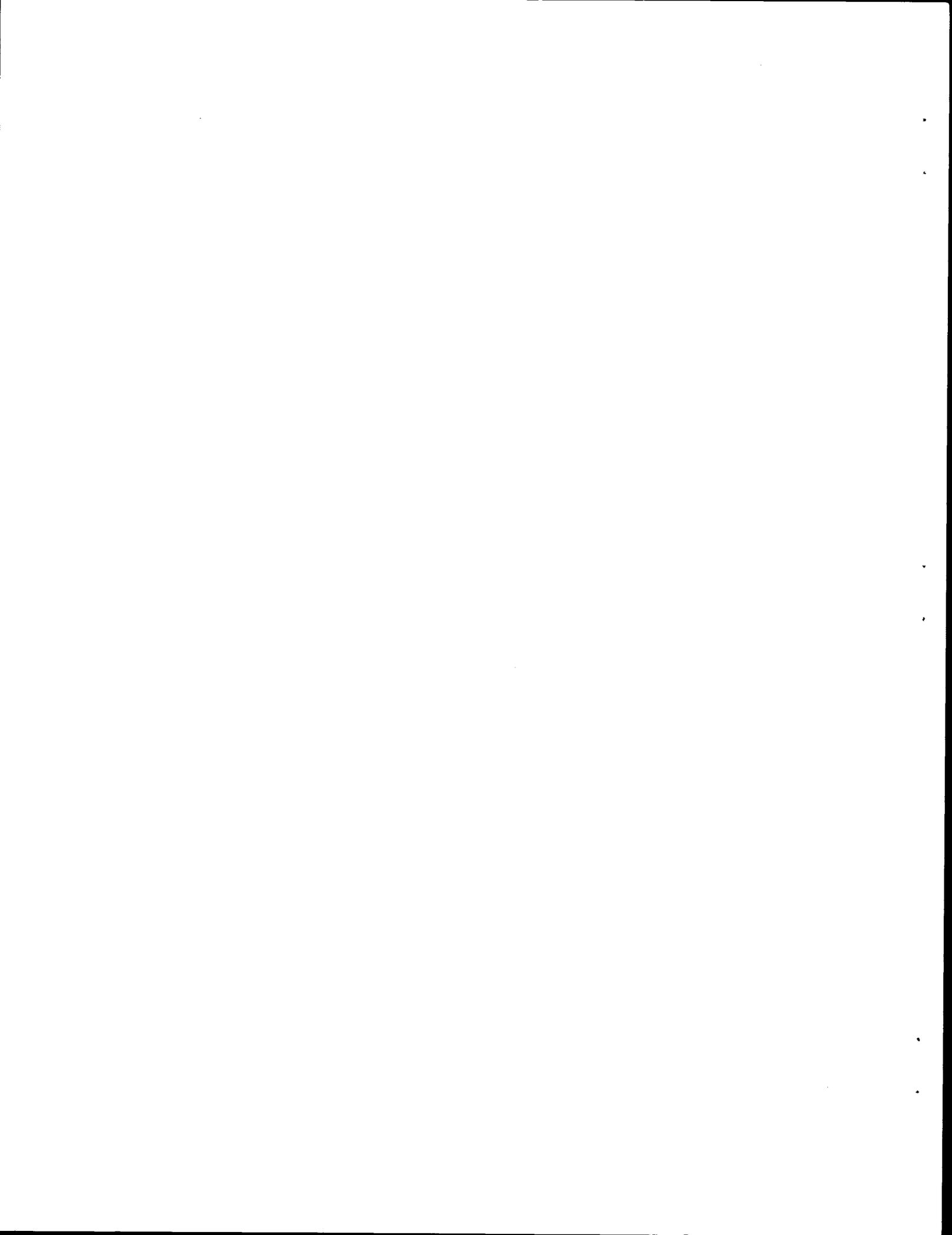
## Site Comparison Matrix

### Technical Factors

Suitability Ranking	Site Number	Soils	System Losses	Distance from Roads	Slope of Land	Depth to Bedrock	Land Parcels	Site Drainage	Local Power Availability	Well Water	Septic Suitability
	Site 1	Cobble Size Cemented Gravels	High	1/2 mile	0-15%	not known	1	Seasonally High Runoff	Distant	Depth Varies	not known
Nonviable	Site 2	Cobble Size Cemented Gravels	Medium	Adjacent	0-5%	not known	5	Good	Distant	Depth Varies	not known
	Site 3	Cobble Size Cemented Gravels	Low	1/3 mile	5-10%	not known	1	Good	Distant	Depth Varies	not known
Nonviable	Site 4	Cobble Size Cemented Gravels	Low	1/2 mile	20%+	not known	1	Good	Available	Depth Varies	not known

### Environmental Factors

Suitability Ranking	Site Number	Residential Impacts	Agriculture Impacts	Wildlife Impacts	Vegetation Impacts	Water Impacts	Soil Impacts	Cultural Resources Impacts	Aesthetic Impacts	Health and Safety Impacts	Socio-Economic Impacts
2	Site 1	Low	Low	Low	Low	Low	Low	Minimal	Low	Low	Low
Nonviable	Site 2	High	Low	Mod.	Low	Mod.	Low	Minimal	Mod.	Low	Low
1	Site 3	Low	Low	Low	Minimal	Minimal	Low	Minimal	Low	Low	Low
Nonviable	Site 4	Low	Low	Low	Minimal	Low	Mod.	Minimal	Mod.	Low	Low



## **7.0 AGENCIES AND PERSONS CONSULTED**

The following agencies and individuals were consulted in preparation of this environmental analysis:

U.S. Army Corps of Engineers  
U.S. Department of Agriculture Soil Conservation Service  
U.S. Fish and Wildlife Service  
WA Historic Preservation Office  
WA Department of Wildlife  
WA Department of Natural Resources  
WA Department of Ecology  
City of Ellensburg  
Kittitas County Planning Department  
Involved Property Owners





### **Sol Schultz, BPA's First Chief Engineer**

In 1939, Sol Schultz became Bonneville's first Chief Engineer. He was appointed by Bonneville's second Administrator, Paul Raver. Schultz had been chief engineer of the New York Port Authority before coming to Bonneville. His task at Bonneville was to develop a transmission grid to move power from Bonneville and Grand Coulee Dams to the rural electric co-ops and public utility districts forming throughout the Northwest.

As part of his plan to move power, Schultz proposed the first wheeling arrangement with an investor-owned utility in the region. Schultz believed in working with investor-owned utilities as well as public power.

Schultz also participated in the first storage exchange agreement between Bonneville and another utility. When problems developed at Bonneville Dam that would limit generation, Schultz proposed a solution: interconnect with Seattle City Light's power plant on the Skagit River. This agreement allowed Bonneville to use Seattle City Light's storage capacity with the run-of-the-river operation of Bonneville Dam. It also allowed Seattle City Light to use Bonneville's operation as a backup when needed.

During World War II the War Production Board directed utilities in the nation to cooperate to increase electric capacity. Schultz was instrumental in forming the Northwest Power Pool, which met this need. The Northwest Power Pool provided a reservoir of 3.3 million kW by interconnecting the ten major private utility systems in the region with the federal transmission grid.

Schultz left Bonneville in 1954. During his tenure as Chief Engineer the transmission system grew from nothing to 4,000 miles of high-voltage transmission lines. The proposed substation named in his honor is a testament to the creativity and skill he used to meet the needs of the Northwest.

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