

# TransAlta Mining Site Industrial Park Feasibility Analysis

PREPARED FOR:

Lewis County Economic Development Council  
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HUITT-ZOLLARS

**BST Associates**

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# Executive Summary

## PLAN OVERVIEW

This report contains market and technical information needed to make decisions on how to proceed with industrial development on reclaimed portion of the coal mining site adjacent to the TransAlta power plant. The Plan Document is broken into two separate sections: (1) Economic Feasibility Analysis and (2) Technical Feasibility Analysis.

### **Section 1: Economic Feasibility Analysis:**

- Chapter 1-1: *Economic Need Analysis.* The first step in the feasibility analysis was to determine that need is sufficient to proceed; this chapter examines the underlying need for living wage jobs and large industrial tract users at the project site. Socio-Economic and technical data related to the project site for use as industrial lands was analyzed. Additional study documentation includes identifying project risks that need to be mitigated and managed.
- Chapter 1-2: *Economic Feasibility.* The financial feasibility of an industrial park development was determined through a basic cost-benefit analysis based on assumptions and estimates of project costs and benefits.
- Chapter 1-3: *Market Feasibility.* Market feasibility was investigated by identifying growth industries and potential industrial clusters with the highest potential for location at the site along with their specific location and operational requirements. Target industry needs were combined with physical site opportunities and constraints to create a conceptual development plan for the site. Exhibits demonstrate infrastructure needed to facilitate development at the site and document the benefits of the project.
- Chapter 1-4: *Conclusions.* Recommended target industries and marketing strategies were identified.

### **Section 2: Technical Feasibility Analysis**

- Chapter 2-1: *Environmental Review.* Contains information about environmental characteristics of the site and the impacts of the site development. Potential mitigation measures are identified. This section of the report is divided into 11 subsections, each dealing with an environmental concern. Subsections are: (1) Earth, (2) Air Quality, (3) Water Resources, (4) Wetlands, (5) Plants & Animals, (6) Noise, (7) Land & Shoreline Use, (8) Aesthetics/Light and Glare, (9) Transportation, (10) Public Services, and (11) Utilities.
- Chapter 2-2: *Partner/Stakeholder Review.* Information on review of process to implement project.
- Chapter 2-3: *Engineering and Design.* Analysis and corresponding exhibits demonstrate options and costs for infrastructure needed to facilitate development at the site.

# OBJECTIVES OF THE REPORT

The reclamation of lands formerly mined for coal has created an opportunity for economic revitalization in Lewis County. An industrial park at the project site is intended to be an employment center for the Southwest Washington region by diversifying economic activities in Lewis County, replacing and increasing high wage jobs lost in other sectors, and providing a new source of local tax revenues. Shovel ready industrial sites in excess of 100 acres are an important component of the overall land uses in western Washington.

After a review of economic and market data, it was found that development of an industrial park focused on large capital intensive industrial uses with minimum sized 100-acre lots is feasible and will have long term benefits to both the County and the State. Capital intensive industries in an industrial park at the former mining site can improve average wages and quality of life in Lewis County; thus, providing an incentive to local students to enhance skills.

## ***SPECIFIC OBJECTIVES OF THIS REPORT ARE:***

- Investigate community interests and support for the Industrial Park on the reclaimed coal mining lands.
- Identify “target” industries with high wage manufacturing jobs;
- Develop living wage positions for the Lewis County community;
- Explore sustainable industries that will fit well within the Lewis County community;
- Provide a development plan that maximizes advantages of the project site, with a focus on industries that can utilize plant by-products –explore “green” industry options;
- Examine means of serving the site with water, sewer, and road access. The “means” should be priced to attract “target” industries;
- Identify and provide economically sound solutions;
- Provide information to aid with review under the requirements of RCW 36.70A.368

# PROJECT GOALS

Eight project goals have been identified to help implement the vision for industrial development of the reclaimed mining lands. Project goals addressed by this project:

- Increase personal income in the County by increasing manufacturing jobs which typically pay relatively high wages.
- Broaden, diversify and increase the existing tax base in Lewis County.
- Facilitate growth in the manufacturing sector of employment. Manufacturing jobs have declined elsewhere in the state and nation, but Lewis County has been successful in facilitating this sector of employment. Data published by the Washington Employment Security Department has indicated that manufacturing was the fastest growing sector of employment in Lewis County, adding 598 new jobs between 2002 and 2007.

- Encourage increased worker skills training to reduce high student drop-out rates and improve wage opportunities.
- Provide employment opportunities for various skill levels for Lewis County residents, and replace the high-wage jobs lost in other sectors, such as Natural Resources and Mining.
- Maximize the “multiplier” effect from activities at the Trans-Alta Industrial Park through the creation of other jobs and business opportunities in the community supporting manufacturers and employees.
- Provide “in County” job options for the growing labor force to reduce the increasingly large number of workers commuting to other counties.
- Target capital intensive industries that create synergies with TransAlta Centralia Operations and with each other, through concepts such as reuse of waste products from one industry as inputs to another (I.E. using fly-ash for concrete) or industries that would benefit from cooperative workforce training.

## **SITE CHARACTERISTICS**

The project site encompasses approximately 4,500 acres of former surface coal mine lands containing several reclaimed areas that can be reused as industrial development sites. Seven development areas are within the approximate 4,500 acre project site. There are an estimated 1,000 acres within the seven areas that are targeted for development, these are the focus of this feasibility study. There is potential to expand the industrial park to include other areas of reclaimed mining lands.

The project site provides an almost unmatched working environment for employees and minimum potential for conflict with adjacent uses. The industrial development areas are reclaimed low hills with sloped and level ground set within an environmental context of wetlands, forest, agricultural valley, regional views, and lakes. Wildlife is abundant on lands adjacent to the park. The industrial park is physically and visually separated from residential and urban uses that could conflict with capital intensive industrial development. A large labor force exists within commuting distance which includes the nearby cities of Centralia, Chehalis and Olympia and several smaller towns. Table 1 shows general site characteristics of development areas at the project site.

**Table 1 – Data for Development Areas at Project Site**

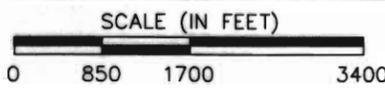
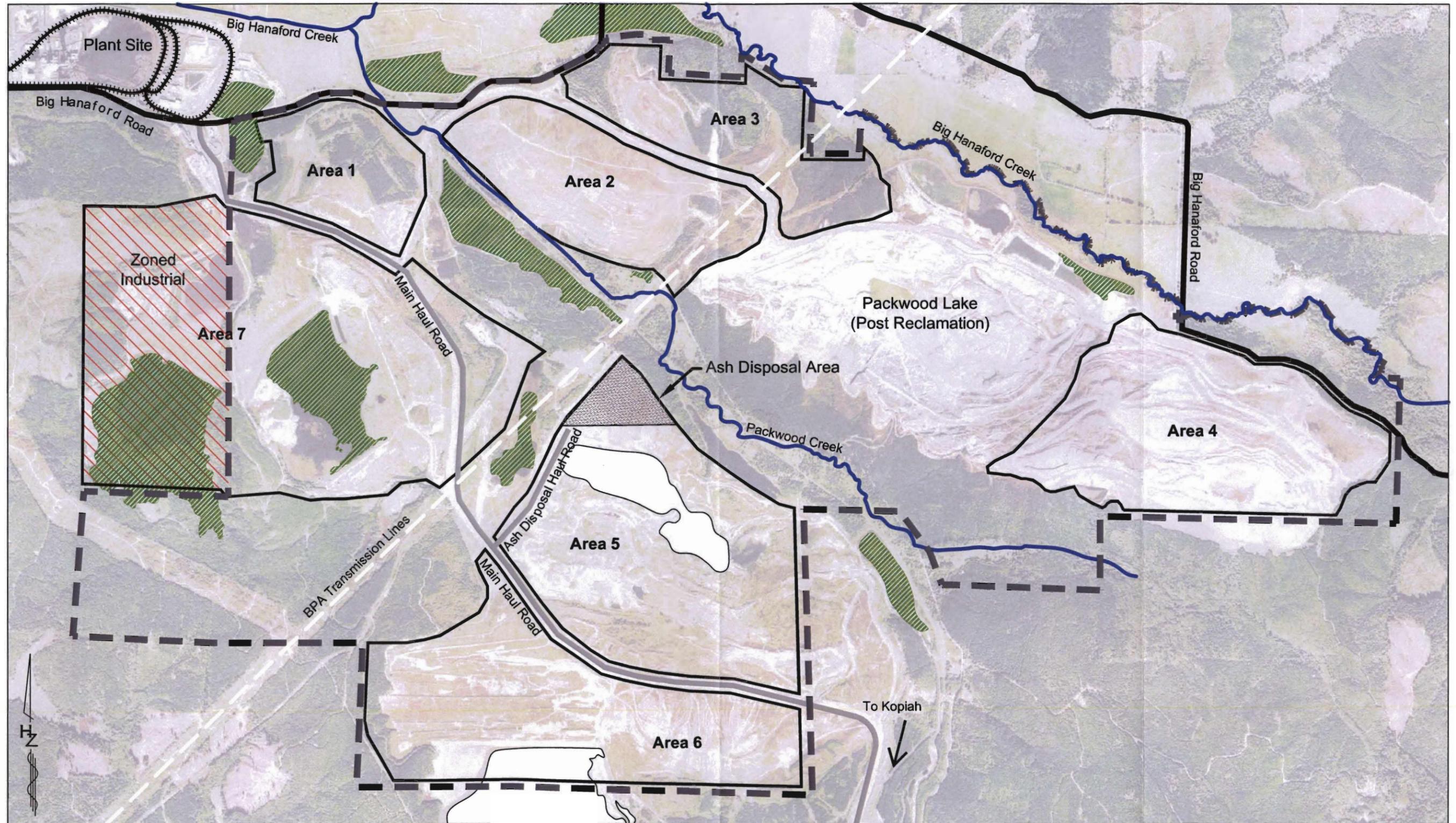
Development Area	Total Size (acres)	Floodplain or Water Body (acres)	Other Restrictions Currently Identified (acres)	Land (acres) Needed for Infrastructure (20% of total lot size)	Net Acres	Comments	Date Available
1	149	0	0	30	119	Site abuts County road. Soon be ready for occupancy.	2009/10
2	242	0	Power Line Easement	48	194	Site abuts County road. Has some constrains due to steep slope areas. Soon ready for occupancy.	2009 /10
3	230	0	Power Line Eastment	46	184	Site abuts a County road. Silica deposits have been identified. Soon be ready for occupancy.	2009/100
4	391	0	0	78	313	Contains 110 acres of area with slopes less than 5%. Has separate access from county road. Adjacent to 221 acre lake.	2011
5	499	75	0	100	324	Ash disposal area located in northern part of development Area will be maintained on-site (along with access agreement)	To be determined
6	442	36	0	88	318	Contains 8 level benches 100 -200 feet wide by ¼ mile long.	To be determined
7	812	242	0	162	408	Contains four water bodies ranging from 12 to 100 acres in size.	To be determined
<b>TOTAL:</b>	<b>2,765</b>	<b>353</b>	<b>0</b>	<b>552</b>	<b>1,860</b>	<b>1,000 acres assumed useable for industrial purposes; 20% to 50% of net acres is assumed slope and buffer area.</b>	

Note: \* Information is subject to change subject to reclamation efforts.

\*\* Additional 20% of developable site (approximately 1,000 acres) will be needed for infrastructure corridors.

## **Exhibit 1. Project Site Characteristics**

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**Legend**

- |   |  |   |                     |
|---|--|---|---------------------|
|  | POST RECLAMATION WETLAND (APPROXIMATE) |  | MAIN HAUL ROAD      |
|  | ZONED INDUSTRIAL                       |  | PROJECT SITE        |
|  | TO BE FILLED (POST RECLAMATION)        |  | TRANSALTA RAIL SPUR |

## **Summary of Trends Addressed by Project**

The project site is ideally suited to support emerging trend towards "green" industries such as wind power, solar, energy efficient vehicle components and sustainable building products (concrete products, road paving and steel and timber assemblies). Industries at the site will have the ability to use by-products from coal fired power generation (heat, ash and carbon dioxide) with local advantages such as timber, aggregate, rail transport, strategic regional location, competitively priced land with permits in place, and skilled labor.

This project is intended to increase manufacturing employment opportunities in Lewis County; historically, the economic engine of Lewis County has been natural resources based industries. Recent declines in timber and mining employment have negatively impacted Lewis County's personal income, wages, economy, quality of life, and tax base. The reduction in resource jobs is beginning to be offset by an increase in manufacturing.

The project is intended to strengthen Lewis County's reputation as a manufacturing center. Manufacturing is currently the fastest growing sector in Lewis County, industrial sites near the Seattle and Portland Metro areas are becoming scarcer and more highly valued. Sites like the project site are becoming more attractive to land intensive users currently located in dense urban areas that wish to expand to sites with more room, predictable environmental regulations, and supportive business communities.

The project is intended to increase the supply of large industrial tracts of land. There is a trend towards the loss of critically needed industrial lands regionally and a shortage in Lewis County of available large manufacturing sites without environmental constraints. This trend exists for the State as a whole. Previous studies commissioned by the LCEDC have documented the declining availability of large (over 100 acre) industrial sites in the county with appropriate zoning, environmental characteristics and infrastructure to service capital intensive industries.

Environmental constraints can slow development and restrict the amount of developable land. There are many variables that contribute to the potential for development of a piece of property. Land can be affected in varying degrees by environmental constraints; parcels with fewer constraints have greater potential for development. Larger parcels of land (in general) offer more options for development, and the proximity to other large developable parcels can increase those options.

The project is intended to help establish zoning and environmental approvals at the project site to increase competitiveness in the regional and international marketplace. A large tract industrial park at the project site has the capacity to be one of the most significant industrial parks on the West Coast serving capital intensive businesses with site demands of over 100 acres.

## **MAJOR CONCLUSIONS**

### **Feasibility Determination**

Project benefits include increased jobs and wages, along with development of support industries that will be needed to provide services to the industrial operations. These benefits may be produced with an investment in infrastructure, marketing and land use approvals.

Development of a large fully serviced industrial park at the project site provides a location that is central to the Seattle and Portland markets and is near Interstate-5. The industrial park can meet future regional demand for larger sites to serve capital intensive industries' needs, infrastructure intensive technology industries, and other 100 acre plus industrial activities.

## Implementation/Actions Proposed

This report documents the next steps, investment required, and benefits of the large tract industrial park. The planning process was initiated by the Lewis County Economic Development Council in conjunction with TransAlta Centralia Operations, local, state, and, federal partners. Priority action items to implement the plan for an industrial park at the site include:

1. Obtain a comprehensive plan change and industrial zoning designation.
2. Establish a not-for-profit entity to take ownership, market, develop infrastructure, and administer operations at an Industrial Park on the project site.
3. Identify and implement incentives to attract target users.
4. Market site to local, regional, national and international "target users" that meet all or some of the following characteristics:
  - a. Capital intensive industries that pay high wages
  - b. Industries requiring large sites
  - c. Industries that have "green" benefits and generate a synergy due to their close proximity to each other
  - d. Can use TransAlta Centralia Operations byproducts (heat, fly ash, bottom ash, carbon dioxide, gypsum)
  - e. Do not have excessive high demand for potable water or users that can use a reclaimed water supply
5. Identify and pursue potential funding sources for infrastructure improvements (grants, loans, etc.).
6. Support implementation of training programs for local labor, reducing high school drop-out rates and supporting target users.

In order to effectively move the plan forward over time, the administrative organization will need to provide over-site and on-going leadership and direction. Table 20 in Chapter 2-1 provides a summary of some infrastructure improvements identified within this plan. Chapter 2-3 provides detailed discussion of infrastructure improvement options along with an opinion of probable cost for improvements.

**PHASE I: ECONOMIC FEASIBILITY ANALYSIS**

# Chapter 1-1: Economic Need Analysis

## PREVIOUS REPORTS AND ANALYSIS

A decline in personal income and average wages in Lewis County has been documented since the 1970's. Lewis County Economic Development Council has commissioned previous studies to address the decline of personal income and average wages in the County. Conclusions of these efforts are:

- Replacement/creation of high wage jobs to replace those lost over the past three decades is a critical need in Lewis County;
- Supporting development of capital intensive industry on large sites near the I-5 corridor is an appropriate way to facilitate high wage jobs in Lewis County;
- Assuring an adequate supply of large industrial zoned land is an important aspect of attracting capital intensive industry;
- A "cluster" of capital intensive industries at the project site would allow businesses to create mutually advantageous operational practices such as resource and infrastructure sharing that can not occur at isolated industrial sites;
- There are few, if any, large (over 100 acres) industrial zoned sites or large lot industrial parks available in the region with appropriate zoning, environmental conditions, and infrastructure service;
- The project site has the best (and possibly only) potential to provide multiple sites of the size needed for large capital intensive industry.

## Economic Development History

The Lewis County Economic Development Council has been proactive in supporting the creation and maintenance of an industrial land supply in Lewis County. Several studies have been commissioned to address the visible decline of industrial lands in Lewis County and more specifically, the I-5 corridor.

### 1997 Lewis County Industrial Land Need Analysis

The November 1997 *Lewis County Industrial Land Need Analysis*, prepared by E.D Hovee and Company, projected a shortfall of industrial land area to meet long term needs of Lewis County. The study found the lack of large industrial development sites in the County will have a negative impact on the County's ability to attract and support businesses that provide family wage jobs. Limits on industrial land supply will reduce the prosperity in the community. The 1997 report also documented information indicating the largest industrial development parcel in Lewis County serviced with utilities and available for sale was 20 acres. The 1997 Analysis recommended Lewis County identify large (50+ acres) prime industrial parcels that could be transformed into "shovel ready" development opportunities for businesses. The study indicated that more than 2,400 acres of industrial land would be needed in the County over the next 20 years.

## **1999 Lewis County Prime Industrial Lands Study**

Acting on the recommendations in the ED Hovee report the Lewis County Economic Development Council commissioned the February 1999 *Lewis County Prime Industrial Lands Study*, prepared by Donna J. Batch; Development Resources. The study was undertaken to identify specific prime industrial sites in Lewis County, that could help make up for the projected short fall (identified in the Batch report) of 1,800 acres over the next twenty years and 4,500 acres over the next 50 years. The 1999 *Industrial Lands Study* focused on identifying land outside of urban growth areas for designation as industrial land banks. The site chosen as the top alternative, selected through a comparative evaluation process, was the tract of land associated with this TransAlta mining lands feasibility study.

## **2005 Lewis County Industrial Lands Analysis Update**

The 2005 *Lewis County Industrial Lands Analysis Update* prepared by E.D Hovee and Company, provided an evaluation of Lewis County's industrial land needs, as part of Lewis County's updating their economic development element of the County's Comprehensive Plan. The 2005 analysis updated and confirmed previous estimates of the amount and size of industrial land needed to sustain economic development in Lewis County over the next 20 years. The report included an inventory of available industrial sites. The report conclusion included policies and goals recommended for Lewis County to consider as the County moved forward with updating their comprehensive plan; one of which was that Lewis County identify and designate large scale (50+ acre) sites for future industrial use to establish a clear competitive advantage in recruiting and retaining industry.

## **CURRENT INDUSTRIAL LANDS SUPPLY**

A limited supply of industrial land makes it difficult for both Lewis County and Washington State to attract large industrial users for manufacturing facilities. Washington has had to turn away industries such as metal fabrication, transportation equipment, and solar related industries, that were not able to find 100-plus acre sites suited for their needs.

This section provides an analysis of the current supply of large industrial sites that could affect planning for the project. The limited supply of large "ready to develop" industrial sites along the I-5 corridor has been previously documented. This lack of industrial sites with amenities necessary to support manufacturing uses has been exacerbated by the recent trend in the construction of distribution centers, which consume large acreage industrial sites with good access to I-5.

Just as there are great differences between industries, there are great differences between tracts of land zoned for industrial use here in the State. There are few large tract industrial zoned sites with access to I-5; for example, Wal-Mart searched for a tract of land along the I-5 corridor from 2003 to 2007 for a distribution center and was unable to find a site to suit their needs (PSU Center for Real Estate Quarterly, 3<sup>rd</sup> Quarter 2007, page 31).

Large tracts of land close to major transportation corridors that are served by utilities and free of a large masses of critical areas are in high demand. The particular need for large industrial manufacturing sites was recently documented in a memo from the State of Oregon, Economic & Community Development Department (OECD) to the State of Oregon Department of State Lands which states "In order to address a state-wide need, the Department of Economic and Community Development supports the

addition of large industrial sites, especially those of 100 to 200 net contiguous developable acres, to the state's industrial land inventory..." To emphasize the OECD's concern over preservation of large industrial sites the OECD's support is based on criteria that "local ordinances restrict the ability of landowners to subdivide these larger sites into parcels of less than 100 acres.

In internal communications between the OECD and the Oregon Department of State Lands, recent large industrial site development activity was summarized as shown in Table 2, these sites were identified as part of OECD's efforts to document increasing demand for large industrial sites.

**Table 2 – Large Scale West Coast Industrial Projects**

Year	Project	Location	Lot Size (est.) Acres	Building Size Square Feet	Type
1996	Target	Albany, OR	175	1.3 million SF	Distribution
1997	Wal-Mart	Hermiston, OR	200	1.3 million SF	Distribution
2002	Dollar Tree	Ridgefield, WA	75	800,000	Distribution
2002	Familian (plumbing)	Tri-Cities, WA	75	500,000	Distribution
2002	Wal-Mart (cold storage)	Granview, WA	100	900,000	Distribution
2004	Lowes	Lebanon, OR	204	1.3 million to 2.2 million	Distribution
2004	Olympic (Vanity Fair)	Shafter, CA	100	900,000	Distribution
2005	EADS	Portland Area	100	2.5	Aerospace
2006	October (cold storage project stalled)	Salem, OR	145	1 million	Distribution
2006	NOAH - PepsiCo	Albany, OR	204	2.5 million	Manufacture
2006	Private Project (Tech)	Northern OR (I-5)	100	1 million	Manufacture
2006	Project GoForth	Salem Area	75-100	1 million	Distribution
2006	Genentech	Hillsboro	100	500,000	Manufacture/Dist.
2006	SolarWorld	Hillsboro	100	1 million	Manufacture/Tech
2006	Jindo	Oregon	100	Unknown	Manufacture
2006	Apricus	N. Oregon	250	Unknown	Manufacture/Tech

Year	Project	Location	Lot Size (est.) Acres	Building Size Square Feet	Type
2007	Crystal	Millersburg	100	Unknown	Manufacture/Tech
2007	HOT	Northern OR	100	Unknown	Manufacture/Tech
2007	Gold Rush	Eastern Oregon	930	Unknown	Manufacture
2007	Navitas	Oregon	150/200	Unknown	Manufacture/Tech
2007	NN2	Hillsboro	150	1.5 million	Manufacture/Tech
2007	Tahoe	Oregon	150	Unknown	Manufacture/Tech

Source: Oregon Economic and Community Development Department

It is interesting to point out that while large tracts being consumed in the 90's and early 2000's were largely used for distribution; since 2005 only one of the last 14 developments was for a distribution facility. Information compiled by the OECDD in Table 3; demonstrates the range of site demand associated with key manufacturing industries.

**Table 3 – Lot Size of Key Manufacturing Industries**

Industry	Minimum Site Size	Predicted Site Size
Secondary Wood Products	5 acres	50 acres
Aerospace/Aviation	2.5 acres	150 acres
High Technology	2.5 acres	250 acres
Light Industrial	2.5 acres	50 acres
Light Manufacturing	2.5 acres	75 acres
Research and Development	0.5 acres	10 acres
Recreational Vehicle Manufactures	5 acres	100 acres

Source: Oregon Economic and Community Development Department

The *Industrial Lands Analysis* included an inventory of Lewis County industrial lands to determine availability of lands in Lewis County for industrial development to determine if the County had an adequate supply of designated industrial sites. At the time of the inventory, it was found that Lewis County had 74 vacant industrial sites totaling 1,900 acres; 51 of the sites (comprising a total of 1,340 acres) are located within the cities of Centralia, Chehalis, Morton, and Napavine. The remaining 555+ acres are located in rural unincorporated Lewis County; sites in unincorporated Lewis County were found to have significant impediments to development.

Of the 1,900 acres of industrial zoned land (74 sites), only 450 acres had no wetland or floodplain issues. It was found that 680 acres have some wetland or floodplain issue, but some portion of these properties could likely be developed with industrial uses after proper site analysis and environmental mitigation is completed. Fifteen sites totaling 580 acres, were found to have 50% of their property falling within the 100-year floodplain. The remaining 190 acres were viewed as substantially constrained and highly unlikely to develop.

The *2005 Lewis County Industrial Lands Analysis Update* concluded that Lewis County had "no vacant industrial sites greater than 100 acres and only two sites that were 50 to 99.9 acres (totaling 130 acres) that are free and clear of environmental constraints. The lack of readily developable large industrial sites places Lewis county at a competitive disadvantage with other I-5 Counties and significantly limits Lewis County's ability to attract larger industrial users, such as another Cardinal Glass or major distribution centers. Furthermore, it is exactly these target users that represent improved wages and positive tax base considerations for Lewis County."

Since preparation of the August 2005 analysis a 500 plus acre site has been approved at the Winlock exit. This site is particularly attractive to warehousing and distribution uses. Considering the attributes of the site, capital intensive would seem to have a difficult time competing for properties at the site.

Table 4, *Industrial Sites Greater than 100 Acres* documents results of a recent examination of industrial sites that are for sale and over at least 100 acres here in the Pacific Northwest. All industrial sites were documented using information from the Washington State Department Community, Trade, and Economic Development (CTED), Oregon Economic and Community Development Department's (OECD), individual port districts, and other sources. The site investigation included a search for the use of controls to preserve large sites, since studies show larger sites to be the ones that attract larger capital intensive industry with high wage jobs. The investigation found no industrial parks where controls are in place requiring the buyer/developer to purchase a minimum 100 acre industrial lot; it can be assumed that many of the sites documented in Table 4 may be subdivided into much smaller parcels at higher per acre value.

**Table 4 – Industrial Zoned Sites Greater than 100 Acres in the Pacific Northwest**

Row	Property	City	State	Min Acres	Max Acres	For Sale	For Lease	Property Description
1	Port of Longview East Industrial Park	Longview	WA	105	105	no	yes	300 acres of prime, shovel-ready industrial property. Marine terminal deep-draft access, rail and interstate highway connections. Ideal for manufacturing, processing and marine operations
2	Port of Longview West Industrial Park	Longview	WA	180	180	Yes	yes	300 acres of prime, shovel-ready industrial property. Marine terminal deep-draft access, rail and interstate highway connections. Ideal for manufacturing, processing and marine operations
3	Mint Farm	Longview	WA	56	228	Yes		228 Acres that can be configured to suit client needs. Currently Displayed as 109, 56, and 63 acre properties
4	Barlow Point	Longview	WA	5	318	Yes	no	3,500 feet of deep water channel frontage with 6,500 total feet of river frontage.
5	SE 18th St between 172nd and 192nd	Vancouver	WA	156	156	Yes	no	8.0 miles to Interstate 205 (I-205) freeway. Industrial zoning.
6	Austin Point	Woodland	WA	10	103	no	yes	Site is currently used as school for heavy equipment operation for displaced workers. Property is set for deep-draft site and is part of Columbia River Channel Improvement Project.
7	Menlo Dairy	Raymond	WA	70	110	Yes	no	110 acres of Menlo dairyland. Beautiful rolling hills, some Willapa River waterfront. 70 acres available now. \$15,000 per acre.

Row	Property	City	State	Min Acres	Max Acres	For Sale	For Lease	Property Description
8	14600 N Lombard St	Portland	OR	113	113	no	yes	Located with the 2,800-acre Port of Portland industrial park, Rivergate Industrial District. Zoned "Heavy Industrial" and is certified for Warehouse/Distribution, General Manufacturing and Heavy Industrial uses.
9	23303 NE Sandy Blvd	Portland	OR	2	110	Yes	yes	Relatively flat land having little to no slope. The property is very open and appealing and has neighbors conducive to industrial development. It provides excellent exposure to I-84 and maintains exceptional access. All utilities located on or near site a
10	5245 NW 292nd Ave	Hillsboro	OR	1	110	Yes		The total certified site is 186.96 acres. Certified for Campus Industrial/Electronic and Computer Assembly and High Tech Manufacturing/Processing.
11	Corvallis Airport Industrial Park	Corvallis	OR	2	190	no	yes	Flat ready to build land. Direct access to Hwy. 99 and 12 miles to nearest interstate I-5. North, South, East and Western uses surrounding property are agricultural. Approximately 4.5 miles to city center. Property is for lease up to 40 years with 10 year extension
12	Hwy 22 & Kuebler Blvd	Salem	OR	146	146	Yes	no	Parcel 1B is located alongside Keubler Blvd between State Hwy 22 (North Santiam Hwy) and Aumsville Hwy, and is just 1.5 miles from the I-5/Santiam Hwy interchange. The parcel is level, and ready for immediate development.
13	Pioneer Industrial Park	Canby	OR	1	225	yes		The industrial park has a variety of sites available for sale and/or build to suit for lease/sale. Zoning: M1-Light Industrial, M2-Heavy Industrial, CM-Commercial

Row	Property	City	State	Min Acres	Max Acres	For Sale	For Lease	Property Description
								Manufacturing. Topography: Level to gentle slope.
14	Stearns Lane, Sutherlin	Sutherlin	OR	10	200	Yes	no	
15	4222 Old Salem Rd NE	Millersburg	OR	5	226	Yes	yes	The City of Millersburg and Wah Chang sites are zoned heavy industrial. They are currently being used for agricultural purposes. These properties are just minutes from Interstate 5 with rail access as well.
16	425 Del Rio Road	Roseburg	OR	166	166	Yes	no	This 166+ acre site is located at 425 Del Rio Road in Roseburg, Oregon just West of Interstate 5 at Exit 129. The site is zoned Heavy Industrial, has direct access to rail, and utilities are available. High Pressure, High Temperature Steam is also availab
17	Rodeo Industrial Park	Lebanon	OR	5	120	Yes	yes	Flat, buildable site. Near Lebanon airport and other, mostly industrial uses.
19	4692 Crater Lake Ave	Medford	OR	NA	209	Yes		Wetland Report, Environmental Studies, Development Plans, Soil Reports All Available Upon Request.
20	8575 Hoffman Rd	Independence	OR	41	194	Yes	no	Property located at 8575 Hoffman Road, Independence, Polk County, Oregon, comprised of approx. 194 acres Polk County tax lots in 8.4.17 600 (46 ac.), and 700 (48 ac.), in 8.4.20 300 (54 ac.), and 400 (45ac.)

Source: Conway Data, 2009

Many sites in Table 4 are located in rural areas with small workforce pools and limited access to major transportation routes; only six of the sites in Table 4 are located near the I-5 corridor and of these six sites only one is located north of Portland.

The location of the project site is differentiated from these sites as it is central to the Portland/Vancouver and Seattle/Tacoma markets, and relatively close to the Vancouver, B.C. market place. It offers multiple development areas to potential industries with access to I-5.

The project site will be one of the only industrial parks in the Pacific North West dedicated to facilitating the needs of "clusters" of large industries requiring a minimum sized 100 acre lot. A large tract industrial park serving the needs of capital intensive industries offers economic efficiencies in both construction and operation of facilities. While small industrial parcels can be combined, this requires the available lands to be in the right configuration and there is an added complexity when dealing with multiple land owners.

## **Project Site Attributes**

The project site has a combination of positive attributes that is rare in the region, but there are some competing properties. The extent to which other properties compete with the project site will vary depending on a number of factors, including location, parcel size, availability for purchase, transportation access, zoning, permitted uses, availability of utilities, price, and others.

### ***Location and Climate***

The project site is located near Centralia, in western Washington. The Cascade Mountains run from north to south through the center of Washington, effectively dividing the state into two distinct regions. Oregon borders Washington 90 miles to the south of the site, and has a similar east-west split. Since the project site is in the western half of the state, the properties most competitive are located in western Washington and western Oregon.

There are several characteristics that distinguish Western Washington from Eastern Washington. Most of the state's population is located on the west side, and is concentrated in the Seattle-Tacoma-Everett metropolitan area. East of the mountains the population concentration is much less dense. The same is true of Oregon, with the largest share of the population concentrated around Portland.

The west side of the state also has access to ocean transportation, with deep-draft harbors on the Columbia River, Grays Harbor, and Puget Sound. East of the mountains, waterborne transportation is limited to barges.

The climate is also quite different between the western and eastern sides of the state. West of the mountains temperatures are moderate throughout the year, while east of the mountain the winters are colder and summers hotter. Western Washington is also substantially wetter than Eastern Washington: the west side of the state receives approximately 35 inches of rain per year, while much of the east side is arid.

### ***Parcel Size***

The project site will offer 100 acre (or greater) tracts of industrial land. West of the mountains, there are few other sites in Washington and Oregon this large. East of the mountains there are a number of locations with parcels this big, but they are located farther from population centers and a skilled workforce.

### ***Availability to Purchase***

Another factor in determining how competitive an industrial park at the project site can be with other properties is whether or not the property is available for purchase. Many firms are only interested in a site if they can buy the land, rather than lease it. Many properties on the western side of Washington and Oregon are only available for lease. This is especially true for waterfront property owned by Port Districts. Development Areas at the project site are intended to be available for purchase.

### ***Transportation Access***

The modes of transportation used by potential industrial tenants depends on the types of materials and products moving to and from the site, the origin and destination of the materials, the volume of material moved, and the handling characteristics of the cargo.

The three main transport modes for moving industrial products are truck, rail, and water. Pipelines are also important, but are limited to a small number of commodities. Of the three primary modes the project site offers both truck and rail access.

Many of the competing sites, especially west of the mountains, are also able to offer direct access to deep-draft shipping. Potential tenants that need direct access to shipping would likely look at these other properties first. However, if a potential tenant needs only indirect or occasional access to waterborne transportation, the site is 30 miles from the Port of Olympia and approximately 60 miles to the Port of Tacoma. Those at the project site would have their choice of approximately 10 deep-water ports within 100 miles.

The project site is served by a heavy-weight rail spur that connects to the joint BNSF-UP mainline. For trucks, the site is located approximately seven miles from Interstate 5.

### ***Other Unique Attributes to the Project Site:***

- Trained available labor force.
- Supportive business environment.
- Access to global markets and strategic partners.
- Access to knowledge networks and institutions.
- Unique community and development areas.
- Reasonable power rates and exceptional power reliability.
- Good access to natural gas and internet/cable.

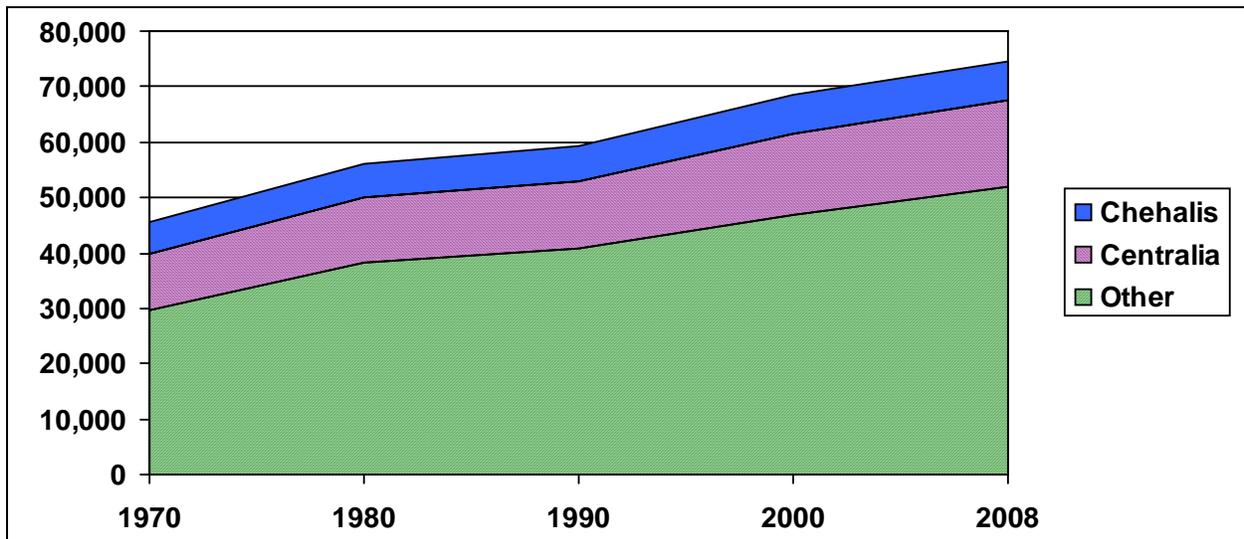
## **SOCIO-ECONOMIC DATA**

### **Population**

Lewis County has experienced substantial population growth over the past three decades. In 1970 there were approximately 45,500 residents in the county; by 2008 it was estimated that there were 74,700, representing an increase of more than 29,000 residents. This is a 64% increase in total population over 38 years with an compounded annual percentage rate of 1.6%.

Lewis County rural and suburban population is increasing faster than the population in urban areas; the share of the total population living in unincorporated parts of the county has increased steadily for the past four decades. The number of residents living in unincorporated parts of the county grew from nearly 25,300 in 1970 to nearly 45,400 in 2008, representing two-thirds of all new County residents. In 1970 the share of county residents not living in an incorporated town or city was 55.5% and by 2008 the share of Lewis County residents not living in an incorporated town or city had reached 60.7%.

**Figure 1- Population Growth: Centralia, Chehalis, and Lewis County**



Source: Office of Financial Management

Between the years 2010 to 2030 growth forecasts for Lewis County range from 0.1% to 2.2% per year which is a slightly wider range of growth rates than those forecast for Washington State as a whole (i.e. 0.4% to 1.8%).

The range of growth, as anticipated from forecasts of the Office of Financial Management (OFM), show the population of Lewis County adding between 2,500 to nearly 51,000 new residents between 2010 and 2030. The low-range forecast projects an annual growth of just 0.1%, yielding a population of 72,100 in 2030. The mid-range forecast projects that the population will grow at an average annual rate of 1.1% during the period, with approximately 23,100 new residents increasing the population from 71,600 in 2005 to nearly 95,000 in 2030. The high-range forecast projects annual growth of 2.2% and a population of nearly 122,500 in 2030. In contrast, Thurston County which contains many jobs held by Lewis County residents is projected to grow at twice this rate. However, it is important to note, that rural populations are often forecasted using the same methodologies employed to forecast urban populations. Assumptions used to reach conclusions for the forecasts are not always representative of economic activities specific to the community. This is particularly true for Lewis County which is near a major transportation corridor with a history of natural resource job loss; it is unlikely that a forecast will accurately gauge the effects of the transition the County is currently going through.

**Table 5 – Population Growth Forecast for Lewis County**

<b>Forecast</b>	<b>2005</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>Growth 2010-2030</b>	<b>Compound Annual Growth Rate 2010-2030</b>
Low	71,600	69,596	70,521	72,230	73,494	74,100	2,500	0.1%
Mid	71,600	77,544	81,175	85,988	90,593	94,696	23,096	1.1%
High	71,600	87,858	95,218	104,304	113,513	122,443	50,843	2.2%

Source: Office of Financial Management

Another source of forecasts used to analyze the Lewis County demographics was the Woods & Poole Economics, Inc data (Woods & Poole is an independent firm that specializes in long-term county economic and demographic projections). According to Woods & Poole, the population of Lewis County is expected to grow from 72,400 people in 2005 to 90,200 in 2030 (approximately 4,500 lower than OFM). Woods & Poole projects an average annual growth of 0.9%, compared with the OFM mid-range forecast of 1.1% per year.

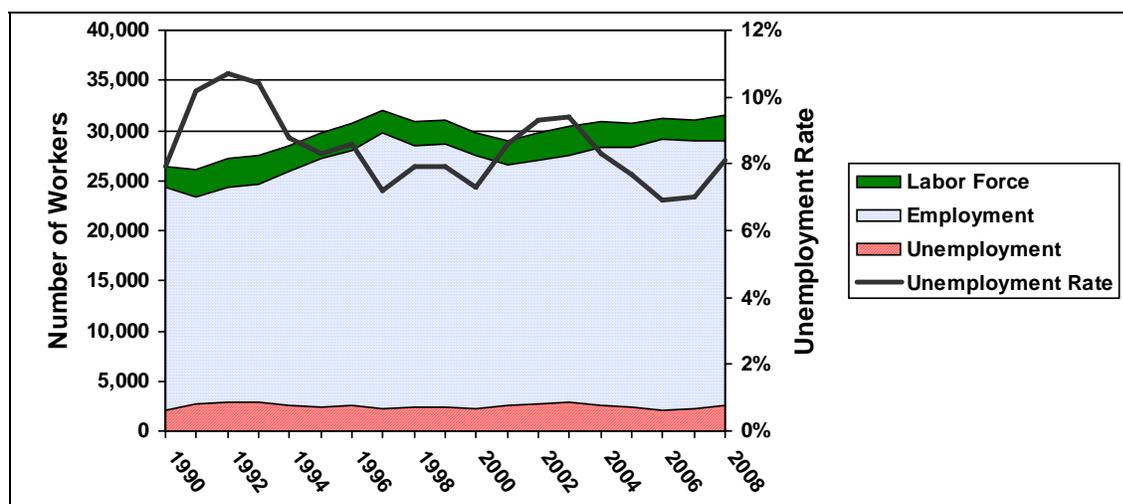
The Woods & Poole forecast provides additional detail on the age categories within the expected general population. According to this breakdown the number of people in the working-age population (25 to 64 years of age) is projected to grow by approximately 5,000 between 2005 and 2030. The development of the Trans Alta site into an industrial zoned manufacturing hub for the Pacific Northwest could provide opportunities for these new workers.

Between 1970 and 2005 the share of Lewis County's population accounted for by working-age residents grew faster than the share of residents 65, and faster than the share of those younger than 25. The share of total population accounted for by working-age residents grew from 36.7% in 1970 to 46.4% in 2005. In contrast, the retirement-age component of the population grew from 13.6% of the total population in 1970 to 15.6% in 2005, while the under-25 component of the population saw its share drop from 49.8% to 38.1%.

## **Employment**

Between 1990 and October 2008 the employment in Lewis County grew at essentially the same rate as the labor force, or approximately 1% per year. The number of workers in the labor force grew from 26,068 in 1991 to 31,550 in October 2008, a total of 5,077 new workers. The number of persons employed increased from 23,409 in 1991 to 28,985 in October 2008, representing a total increase of 4,598 employed Lewis County residents.

**Figure 2 – Workforce, Employment and Unemployment**



Source: Bureau of Labor Statistics

The share of the workforce not employed fluctuated from less than 7% to nearly 11% between 1990 and October 1992. The unemployment rate varied between 8.3% and 8.8% from 1994 to 1996, and then dropped below 8.0 % from 1997 through 2000. The rate of unemployment was lowest in 1997, 2000, 2006 and 2007, averaging 7.3%. Unemployment rates peaked between 1991 and 1993, averaging between 10.2% and 10.7% in each of those years. In 2000, during the recession, the unemployment rate in Lewis County climbed back above 9% for a few years before falling steadily through 2006; in 2007 and 2008 the unemployment rate rose again.

The Lewis County unemployment rate has proven to be more volatile during this current national economic downturn; in March of 2009 the Bureau of Labor Statistics documented the unemployment rate for Lewis County at above 14.2% compared with the Washington State employment rate at 9.2%.

**Table 6 –Workforce Statistics**

Year	Lewis County Labor Force	Employment	Unemployment	Lewis County Unemployment Rate	Washington State Unemployment Rate	Difference between Lewis Co. and State Wide
1990	26,473	24,387	2,086	7.9%	5.1%	2.80%
1991	26,068	23,409	2,659	10.2%	6.3%	3.90%
1992	27,181	24,275	2,906	10.7%	7.2%	3.50%
1993	27,546	24,689	2,857	10.4%	7.1%	3.30%
1994	28,500	25,995	2,505	8.8%	6.5%	2.30%
1995	29,728	27,263	2,465	8.3%	6.3%	2.00%
1996	30,653	28,029	2,624	8.6%	5.9%	2.70%
1997	32,045	29,751	2,294	7.2%	4.9%	2.30%
1998	30,867	28,429	2,438	7.9%	4.8%	3.10%
1999	31,096	28,626	2,470	7.9%	4.8%	3.10%
2000	29,745	27,570	2,175	7.3%	5.0%	2.30%

Year	Lewis County Labor Force	Employment	Unemployment	Lewis County Unemployment Rate	Washington State Unemployment Rate	Difference between Lewis Co. and State Wide
2001	29,015	26,526	2,489	8.6%	6.2%	2.40%
2002	29,806	27,045	2,761	9.3%	7.3%	2.00%
2003	30,367	27,501	2,866	9.4%	7.4%	2.00%
2004	30,873	28,315	2,558	8.3%	6.2%	2.10%
2005	30,692	28,342	2,350	7.7%	5.5%	2.20%
2006	31,218	29,065	2,153	6.9%	4.9%	2.00%
2007	31,064	28,883	2,181	7.0%	4.5%	2.50%
2008	31,550	28,985	2,565	8.3%	5.5%	2.50%

Source: Bureau of Labor Statistics (Note: 2008 County Employment Data is an average of the months of January through October. The State Unemployment Data includes the preliminary December data)

Lewis County's unemployment rate has been one of the highest in the region for the past two decades. Between 1990 and October 2008, the unemployment rate was an average of 50% higher than the statewide average and was never less than 30% above the state average. At times there have been almost 40% more unemployed workers in Lewis County relative to the state unemployment rate. There is a need to expand the employment base in Lewis County. The development of reclaimed mining lands into a capital intensive industrial park would provide approximately 2.2 jobs per acre at the site, yielding approximately 2,200 jobs at an industrial park at the project site. These jobs would help to stimulate and sustain employment in other sectors of the local and State economy.

## Income and Wages

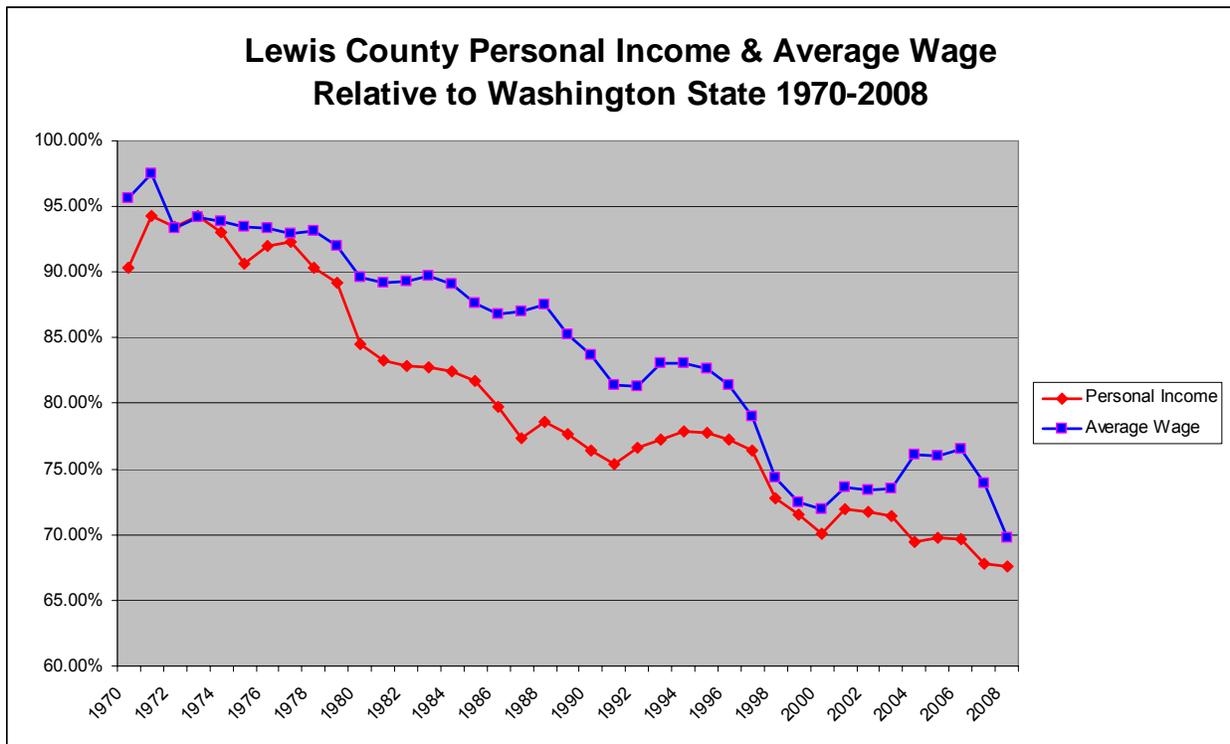
According to the Bureau of Economic Analysis, per capita income in Lewis County grew from approximately \$9,100 per person per year in 1980 to more than \$27,600 per person in 2007 (at the time this report was prepared, 2007 was latest year for which this data was available). The growth in personal income averaged 4.2% per year.

Despite the nominal growth in personal income, the rate of inflation during the 1980-2007 time period limited growth in real (inflation-adjusted) income.

The Consumer Price Index (CPI) increased at an average annual rate of 3.5% from 1980 to 2007, resulting in real personal income growing by just 0.7% per year. Real personal income averaged \$22,800 in 1980 (in 2007 dollars), and rose above \$27,600 in 2007.

Nominal growth in per capita personal income has been slower in Lewis County than in Washington State as a whole. Statewide, personal income grew by 250% between 1980 and 2007 (in 2007 dollars) compared with less than 200% for Lewis County. Both per capita income and average wages in Lewis County declined relative to those of Washington State, from more than 90% of the State level in 1971 to less than 75% of the State level in 2007.

**Figure 3 – Income and Average Wage**



**Source: Bureau of Economic Analysis**

Average wages for workers in Lewis County are substantially lower than wages in Washington State as a whole. According to data from the Washington State Employment Security Department (ESD), between 2002 and 2008 (note: 2008 data was estimated) the average wage for covered employment in Lewis County averaged just 69% of the statewide average.

The average annual wage for workers in Washington was \$38,244 in 2002, and grew to \$45,016 in 2007. In Lewis County the average annual wage grew from \$28,086 to \$33,269 between 2002 and 2007. During this period average wages in Lewis County grew at a rate slightly faster than the state average, but because this growth started from a lower base the difference in wages grew from \$10,158 in 2002 to \$11,747 in 2007.

In order to maintain a quality of life consistent with other Washington counties, Lewis County is in need of taking action to increase income and wages in the County. Capital intensive jobs typically have high labor "value added" per unit of labor required to produce the goods/services. Capital intensive industries are intended to have a high level of productivity; this is possible because the capital investments are used to equip the industry with essential tools and high tech productivity of labor, resulting in greater output per unit of labor. As the capital intensity of capital intensive industries results in a higher level of productivity, these industries possess the power to generate higher worker per capita income (and thus more profit).

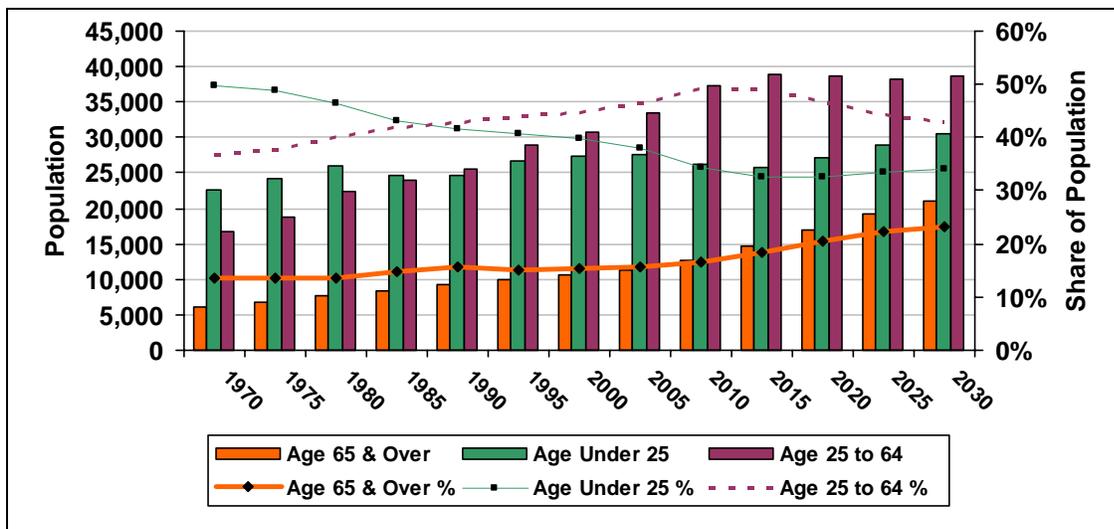
## Labor Force

The number of Lewis County residents of working age (25 through 64 years) has grown steadily since 1970, and is projected to continue to grow through 2015. After 2015 the number of residents in that age range is projected to begin to decline slowly.

The number of Lewis County residents younger than 25 grew during the 1970's, declined during the 1980's, and then climbed again during the first half of the 1990's. Since 1995 the growth in this segment of the population has been relatively flat, and is expected to decline through 2015. The fastest growing segment of Lewis County's population is expected to be people 65 years and older through 2030. According to projections from Woods & Poole, between 2005 and 2030 Lewis County is expected to add 5,000 residents of working age, 3,100 residents younger than 25, and 9,700 residents 65 and older.

The employment base will need to be expanded to provide employment opportunities for Lewis County; capital intensive industries at a large tract industrial park could provide skilled labor employment. It was estimated that an industrial park at the site would yield approximately 2.2 employees per acre on the 1,000 acres targeted developable industrial lands, thus expanding opportunities for the growing labor force by creating some 2,200 jobs.

**Figure 4 – Age Distribution of Lewis County Population**



Source: Woods & Poole

## Journey to Work

Data from the 1990 and 2000 Census illustrate the extent to which workers in Lewis County commute to work outside of Lewis County. According to Census data, in 1990 there were 23,171 workers living in Lewis County. By 2000 the number of workers living in Lewis County had grown to 26,390, an increase of more than 3,200 workers. In 1990, nearly 85% of the workers living in Lewis County held jobs in the county, by 2000 this had dropped to less than 80%. The number of workers living in Lewis County that worked in Lewis County grew by more than 1,400 between 1990 and 2000, but the number of Lewis County residents working outside the county increased even more, by a total of nearly 1,800. More than 55% of the additional workforce living in Lewis County commuted to jobs outside the county. This is a

troubling occurrence - particularly due to lost tax base, increased traffic congestion, and higher out-migration of young workers.

**Table 7 – County of Work for Lewis County Residents**

Workplace County	1990		2000		Increase/ Decrease
	Workers	Share of Total	Workers	Share of Total	
Lewis Co. WA	19,635	84.7%	21,073	79.9%	1,438
Thurston Co. WA	1,749	7.5%	2,383	9.0%	634
Mason Co. WA	37	0.2%	71	0.3%	34
Grays Harbor Co. WA	135	0.6%	147	0.6%	12
Cowlitz Co. WA	607	2.6%	899	3.4%	292
Pacific Co. WA	52	0.2%	70	0.3%	18
Other Washington	814	3.5%	1,400	5.3%	586
Out of State	142	0.6%	347	1.3%	205
Total	23,171	100.0%	26,390	100.0%	3,219

Source: US Census 1990 and 2000

A look at the top 10 counties of work for Lewis County workers commuting to jobs in other counties shows that Thurston County remained the largest importer of workers from Lewis County. In 1990 approximately 1,750 Lewis County residents commuted to jobs in Thurston County, and by 2000 this had grown to nearly 2,400, a net increase of 634 workers. In 1990 Thurston County accounted for essentially half of all workers commuting outside of Lewis County, and in 2000 it accounted for approximately 45%.

The US Census indicates that Pierce County and King County also imported growing numbers of workers from Lewis County. In 1990 there were 624 workers from Lewis County commuting to these two counties, accounting for approximately 18% of commuters. By 2000 this had jumped to 1,181 workers, an increase of 557 workers accounting for 22% of Lewis County commuters.

The number of workers commuting to Cowlitz County grew by nearly 300, and the number commuting to the Portland-Vancouver area (Clark County & Multnomah County) grew by more than 120. The share of Lewis County workers commuting to the Cowlitz, Clark, and Multnomah Counties grew from 678 to 1,093, and these three counties accounted for approximately 20% of out-of-county commuters in both 1990 and 2000.

**Table 8 – Top 10 Counties of Work for Lewis County Residents Not Working in Lewis County**

Workplace County	1990		2000		Increase/ Decrease
	Workers	Share of Total	Workers	Share of Total	
Thurston Co. WA	1,749	49.5%	2,383	44.8%	634
Cowlitz Co. WA	607	17.2%	899	16.9%	292
Pierce Co. WA	367	10.4%	641	12.1%	274
King Co. WA	257	7.3%	540	10.2%	283
Grays Harbor Co. WA	135	3.8%	147	2.8%	12
Multnomah Co. OR	38	1.1%	97	1.8%	59
Clark Co. WA	33	0.9%	97	1.8%	64
Mason Co. WA	37	1.0%	71	1.3%	34
Pacific Co. WA	52	1.5%	70	1.3%	18

Workplace County	1990		2000		Increase/ Decrease
	Workers	Share of Total	Workers	Share of Total	
Yakima Co. WA	51	1.4%	39	0.7%	(12)
Other Washington	106	3.0%	83	1.6%	(23)
Other Oregon	19	0.5%	162	3.0%	143
All Other	85	2.4%	88	1.7%	3
Total	3,536		5,317		1,781

Source: US Census 1990 and 2000

In addition to exporting workers to other counties, Lewis County also imports workers who live in other counties. In 1990 there were nearly 3,800 residents of other counties who commuted to jobs in Lewis County; by 2000 this number grew to nearly 4,000, an increase of nearly 200 workers. Most of these non Lewis County workers were residents of Thurston County. In 1990 more than 2,600 residents of Thurston County commuted to Lewis County, accounting for 69% of all non-local workers and 11% of all workers; and in 2000 it had grown to nearly 2,850 workers, accounting for 71% of non-local workers and 16% of all workers.

Other counties that provided large numbers of workers to Lewis County included Cowlitz and Grays Harbor, although the number of workers commuting from these counties decreased substantially between 1990 and 2000. In fact, the total number of workers commuting into Lewis County from counties other than Thurston County decreased by 44 workers between 1990 and 2000.

- ***The share of non-local workers commuting into Lewis County from these other counties dropped from 31% to 29% at the same time that out migration to jobs outside of the County grew.***

**Table 9 – County of Residence for Workers With Jobs In Lewis County**

County of Residence	1990		2000		Increase/ Decrease
	Workers	Share of Total	Workers	Share of Total	
Lewis Co. WA	19,635	83.8%	21,073	84.1%	1,438
Thurston Co. WA	2,610	11.1%	2,843	11.3%	233
Mason Co. WA	26	0.1%	41	0.2%	15
Grays Harbor Co. WA	262	1.1%	180	0.7%	-82
Cowlitz Co. WA	343	1.5%	300	1.2%	-43
Pacific Co. WA	67	0.3%	66	0.3%	-1
Other Washington	411	1.8%	396	1.6%	-15
Out of State	80	0.3%	162	0.6%	82
Total	23,434	100.0%	25,061	100.0%	1,627

Source: US Census 1990 and 2000

Between 1990 and 2000 the net impact of these different commute patterns was an increase in the number of workers commuting out of Lewis County. The number of out-of-county workers commuting into Lewis County grew by 189, while the number of Lewis County residents commuting out of the county increased by 1,781, which means that an additional 1,592 Lewis County workers (net) were commuting to jobs outside of Lewis County. A large industrial development with living wage manufacturing jobs could help reduce the number of workers having to commute out of Lewis County to earn a living.

## Employment by Industry Sector

According to data from the Washington Employment Security Department (ESD), the number of jobs in Lewis County grew by 966 between 2002 and 2007. Based on the 2002 employment of 24,689, the additional jobs represent a very low rate of growth, averaging less than 0.1% per year. The change in employment during this five-year period varied widely among different sectors of the economy. The sectors of the economy generating the most employment were government, retail trade, manufacturing, and health care. These four sectors combined accounted for 56.0% of all employment in 2003 and accounted for 57.9% of all employment in 2008. **Manufacturing was the fastest-growing sector, adding 598 new jobs between 2002 and 2007.** Retail employment also saw strong growth, with an additional 319 jobs. Government employment was nearly flat, growing by just 50 jobs, while the health care sector added 58 jobs.

Sectors that lost jobs between 2002 and 2007 included transportation and warehousing (216 jobs lost), wholesale trade (88 jobs lost), management of companies (88 jobs lost), administrative & waste services (15 jobs lost), and other services (222 jobs lost).

**Table 10 – Employment by Industry Sector in Lewis County**

NAICS Code	Industry	2002	2007	5-Year Growth	AAGR	Share of Employment	
						2002	2007
11	Agriculture, forestry, fishing	1,391	1,385	(6)	0.0%	5.6%	5.4%
21	Mining	648	n/a <sup>1</sup>	n/a	n/a	2.6%	n/a
22	Utilities	n/a	n/a	n/a	n/a	n/a	n/a
23	Construction	921	1,236	315	0.5%	3.7%	4.8%
31-33	Manufacturing	3,049	3,647	598	0.3%	12.3%	14.2%
42	Wholesale trade	631	543	(88)	-0.3%	2.6%	2.1%
44-45	Retail trade	3,252	3,571	319	0.2%	13.2%	13.9%
48-49	Transportation and warehousing	1,419	1,203	(216)	-0.3%	5.7%	4.7%
51	Information	267	308	41	0.3%	1.1%	1.2%
52	Finance and insurance	430	431	1	0.0%	1.7%	1.7%
53	Real estate and rental and leasing	208	306	98	0.7%	0.8%	1.2%
54	Professional and technical services	303	404	101	0.5%	1.2%	1.6%
55	Management of companies	151	63	(88)	-1.6%	0.6%	0.2%
56	Administrative and waste services	765	750	(15)	0.0%	3.1%	2.9%
61	Educational services	77	113	36	0.7%	0.3%	0.4%
62	Health care and social assistance	2,659	2,717	58	0.0%	10.8%	10.6%
71	Arts, entertainment, and recreation	n/a	432	n/a	n/a	n/a	1.7%
72	Lodging and food services	1,984	2,116	132	0.1%	8.0%	8.2%
81	Other services, except public admin	1,183	961	(222)	-0.4%	4.8%	3.7%
92	Government	4,866	4,922	56	0.0%	19.7%	19.2%
	<b>Total</b>	<b>24,689</b>	<b>25,655</b>	<b>966</b>	<b>0.1%</b>	<b>100.0%</b>	<b>100.0%</b>

Source: Washington Employment Security Department

<sup>1</sup> The data was not available per a query of Washington Employment Security Department data, but a TransAlta representative indicated that in 2007 the number of persons employed by mining activities was 34 (a 0.13% share of total employment).

Employment in Washington State grew faster than in Lewis County between 2002 and 2007; Washington State grew at an annual average rate of 0.2%, while Lewis County grew at 0.1%.

The four sectors of the economy that account for the largest share of Lewis County employment are also critical to the state. These four sectors: (1) government, (2) retail trade, (3) manufacturing, and (4) healthcare, accounted for 50.3% of statewide employment in 2002 compared with 56.0% of employment in Lewis County. However, by 2007 the share of statewide employment accounted for by these sectors dropped to 48.4%, while in Lewis County the share grew to 57.9%.

Statewide, the sector of the economy that added the most jobs between 2002 and 2007 was construction, with more than 52,000 new jobs. Several different service sectors each added more than 30,000 new jobs, including administrative and waste services, health care, lodging and food services, and miscellaneous services. Government employment accounted for a decreasing share of jobs statewide.

In Lewis County, there were 3,049 manufacturing jobs in 2002 and 3,647 manufacturing jobs reported in 2007 (representing 598 new manufacturing jobs). Lewis County has fostered an environment where manufacturing employment opportunities have grown by almost 2.0% in five years. Development of an industrial park that caters to the needs of capital intensive manufacturing industries will respond to the trend of the demand for manufacturing jobs in the County.

**Table 11 – Employment by Industry Sector in Washington**

NAICS Code	Industry	2002	2007	5-Year Growth	AAGR	Share of Emp	
						2002	2007
11	Agriculture, forestry, fishing	76,389	84,704	8,315	0.2%	2.9%	2.9%
21	Mining	2,965	3,035	70	0.0%	0.1%	0.1%
22	Utilities	4,461	4,648	187	0.1%	0.2%	0.2%
23	Construction	142,285	194,517	52,232	0.6%	5.4%	6.6%
31-33	Manufacturing	280,964	289,245	8,281	0.1%	10.6%	9.9%
42	Wholesale trade	111,634	125,702	14,068	0.2%	4.2%	4.3%
44-45	Retail trade	297,953	321,212	23,259	0.1%	11.3%	11.0%
48-49	Transportation and warehousing	78,224	85,485	7,261	0.2%	3.0%	2.9%
51	Information	92,715	101,992	9,277	0.2%	3.5%	3.5%
52	Finance and insurance	96,701	101,885	5,184	0.1%	3.7%	3.5%
53	Real estate and rental and leasing	45,009	49,991	4,982	0.2%	1.7%	1.7%
54	Professional and technical services	131,001	151,642	20,641	0.3%	5.0%	5.2%
55	Management of companies	30,186	34,648	4,462	0.3%	1.1%	1.2%
56	Administrative and waste services	118,810	149,945	31,135	0.4%	4.5%	5.1%
61	Educational services	26,632	31,514	4,882	0.3%	1.0%	1.1%
62	Health care and social assistance	260,778	296,628	35,850	0.2%	9.9%	10.1%
71	Arts, entertainment, and recreation	40,715	45,569	4,854	0.2%	1.5%	1.6%
72	Lodging and food services	199,896	230,160	30,264	0.3%	7.6%	7.9%
81	Other services, except public admin	74,461	114,692	40,231	0.8%	2.8%	3.9%
92	Government	490,324	509,026	18,702	0.1%	18.5%	17.4%
99	Not Elsewhere Classified	41,619	n/a	n/a	n/a	1.6%	0.0%
	Total	2,643,722	2,926,239	282,517	0.2%	100.0%	100.0%

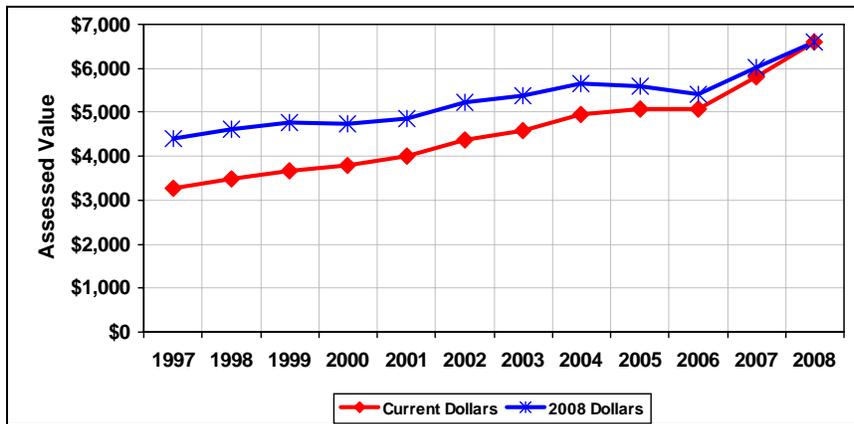
Source: Washington Employment Security Department

# Tax Base and Tax Receipts

Local governments generate income through a variety of taxes, including property, sales and use utility and permit fees tax. The following section discusses recent trends in tax receipts for Lewis County and the surrounding region.

Property taxes are based on the assessed value of property. In Lewis County, the total assessed value of property doubled between 1997 and 2008, growing from approximately \$3.3 billion in 1997 to \$6.6 billion in 2008. The annual growth rate of assessed value averaged 6.6% in Lewis County between 1997 and 2008. Applying an adjustment factor for inflation lowers the average annual growth, yet the growth in assessed value remained strong. Inflation, as measured by the Consumer Price Index (CPI), averaged 2.7% per year between 1997 and 2008. The resulting inflation-adjusted rate of growth of property values was 3.8%.

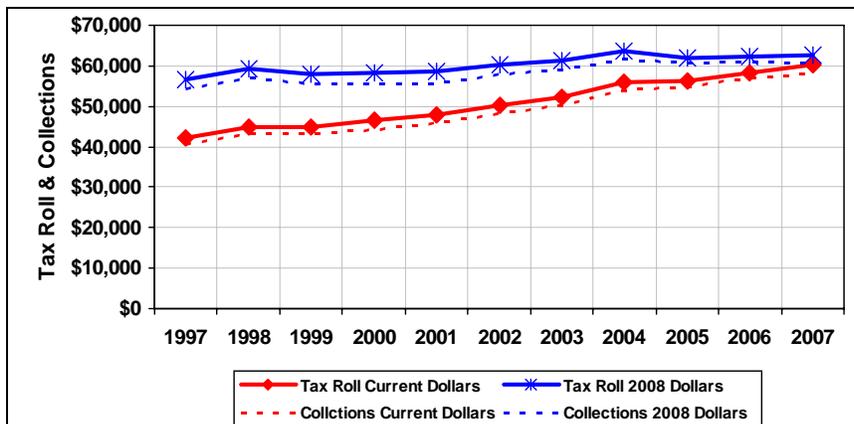
**Figure 5 – Assessed Value of Property in Lewis County, by Year Due**



Source: Washington Department of Revenue

The property tax rolls and tax collections for Lewis County increased between 1997 and 2007, but at a lower rate than the assessed value. In current-dollar terms the property tax roll grew by 3.6% per year, and when adjusted for inflation it grew by 1.0% per year.

**Figure 6 – Property Tax Roll & Collections in Lewis County**



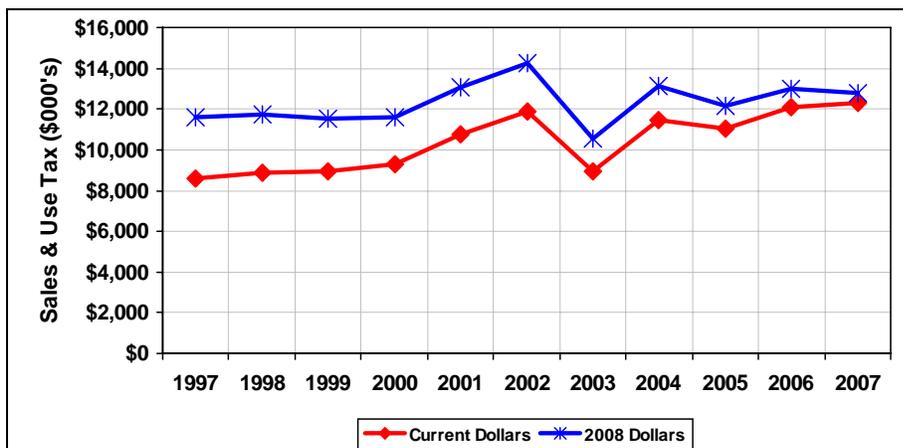
Source: Washington Department of Revenue

Collections of the property taxes owed averaged 96% or more for most of the period. In the most recent three years for which figures are available the collection rate averaged better than 97%, which only slightly below the state average. The Lewis County's property tax base would be largely expanded by the development of four to seven 100-acre (plus) industrial tracts accommodating capital intensive manufacturing uses on reclaimed mining lands.

In addition to property taxes, sales and use taxes are another important component of local financing. Between 1997 and 2007 the annual average rate of growth in these taxes was nearly identical to that of property taxes. Adjusted for inflation, sales and use taxes in Lewis County increased at an annual average rate of 1.0% between 1997 and 2007. In current dollars sales and use tax receipts increased at an annual average rate of 3.6%, but inflation (as measured by CPI) averaged 2.6% per year.

The growth in sales and use taxes was not smooth especially during the middle years of the past decade. Growth was especially strong in 2001 and 2002, but receipts dropped sharply in 2003. Tax receipts recovered in 2004, but since that time have dropped in two of the three most recent years (when adjusted for inflation).

**Figure 7 – Sales & Use Tax in Lewis County**



Source: Washington Department of Revenue

Table 12 below presents a comparison of assessed value, property tax roll, property tax collection, and sales and use taxes for the region surrounding Lewis County and for Washington State.

**Table 12 – Comparison of Tax Receipt Growth Rates**

County	1997 to 2008 Assessed Value		1997 - 2007 Property Roll		1997 - 2007 Property Collection		1997 - 2007 Sales & Use	
	Nominal	Real	Nominal	Real	Nominal	Real	Nominal	Real
Lewis	6.6%	3.7%	3.6%	1.0%	3.7%	1.1%	3.6%	1.0%
Thurston	9.8%	6.9%	5.0%	2.3%	5.0%	2.4%	7.3%	4.6%
Mason	7.0%	4.2%	4.2%	1.6%	4.4%	1.7%	6.7%	4.0%
Grays Harbor	5.7%	2.9%	4.0%	1.4%	4.2%	1.5%	4.4%	1.8%
Cowlitz	3.7%	0.9%	1.9%	-0.7%	1.9%	-0.7%	4.9%	2.3%
Pacific	5.2%	2.4%	4.1%	1.4%	4.4%	1.8%	4.9%	2.2%
Washington State	8.9%	6.0%	5.2%	2.6%	5.3%	2.7%	5.6%	2.9%

Source: Washington State Department of Revenue

Development of capital intensive manufacturing facilities along with the effects of an additional 2,200 jobs at the project site would stimulate and help sustain other sectors of the local and State economy. New income and wages from workers along with goods and services that would be required to facilitate operations at a large tract industrial park would increase sales tax revenue in Lewis County.

## STAKEHOLDER AND INDUSTRY INTERVIEWS

### Industry Leaders

Professionals involved in various aspects of industrial site selection were interviewed in order to develop an understanding of some key factors in the site selection process. Professionals from industrial realtors, industrial park managers, manufacturers, and railroads backgrounds were contacted and informal interviews were composed. Major points extracted from the interviews are presented below:

- **Local Competition.** Land brokers were unable to identify an industrial park in the region that would be competitive with that of the project site for capital intensive manufacturing.
- **The Un-Built Site** creates uncertainty to potential industrial developers. An industrial park site that already hosts industrial users is generally viewed as more desirable than an undeveloped industrial park, because developers know that some development issues have been resolved and they can formulate expectations on the development process.

The more complete and ready an industrial park at the site appears, the easier it will be to market to potential developers. An ideal situation would be the design and issuance of permits for infrastructure, utilities in place, and land ready for development.

An industrial land broker indicated that while tenants will often say that they need to have a new facility up and running within nine months, 24 months is a more typical schedule. In this case, having designs completed, a project timeline, and a guaranteed financing plan in place for the infrastructure may be sufficient.

- **Permitting** potential tenants are much more likely to choose a site in which all of the environmental and regulatory work has been completed.
- **Water and Wastewater** is a critical issue, not just water used for processing but domestic water and water for fire flows. Equally important is the capacity for wastewater. The amount of water needed can vary over a wide range, depending on the industry. For example, food processing uses large volumes of process water and produces large volume of wastewater, but may not have large needs for fire flow. In contrast, a facility that handles or store large volumes of flammable materials may need substantially higher fire flow, but will not require a substantial amount of water for domestic flow. The needs of water for fire flow depend on the size of the building as well as the materials handled and stored.
- **Transportation** access is another critical component of the development. For users who depend on rail transportation, it is better to have access by multiple railroads than to be limited to just one freight carrier. Competition for access to the rail spur could also become an issue, especially given the number of trains and size of the trains delivering coal to the TransAlta Centralia Operations. Depending on rail needs of potential users, additional track might be required since

coal trains will have priority.

- **Zoning.** If the site is to be marketed to national and international manufacturing corporations, that will be investing large sums of money to facilitate their operations, they will need to have assurance that utility infrastructure and zoning is in place.
- **Access.** The site will be more marketable if there is more direct access to I-5.
- **Distribution Centers.** Recent industrial land transactions for large industrial tracts of land in the Northwest have been weighted toward distribution centers. Realtors were in agreement with the decision to not market this site for distribution. The LCEDC had previously chosen to exclude this group of uses since they do not have the same wage and tax impact as manufacturers.
- **Lease v. Sale.** Many potential tenants would prefer to purchase property rather than lease. The option of purchasing property rather than leasing is a major issue for many potential tenants. Financing tends to be much easier to obtain for projects on owned land rather than leased land. In western Washington and western Oregon port districts control much of the available industrial land, but their charters often prevent them from selling land. The ability of potential tenants to buy property at the site could provide a competitive advantage.

## Agency Representatives

- It will be necessary to think outside the box in marketing the site to potential industries. A holistic approach will have to be devised. Retaining and accommodating industries in Washington State should be a priority, but the site should be marketed both nationally and internationally.
- There has been interest expressed in *green businesses* that could complement the sites attributes and use by-products from the electricity generation operations (fly ash, boiler slag, gypsum) at TransAlta.
- In order to better market the site as *shovel ready* LCEDC Board members expressed that an analysis of the soils geotechnical stability at the industrial park would be an appropriate action as a part of the Board's due diligence. The purpose of the soils geotechnical analysis would be to document the quality of the soil at the sites.
- A soils analysis will be an important part of the environmental review process; having information on soils will allow potential investors to be ahead of speculation.
- Rather than being shovel ready, another approach would be to get a commitment from an industry and work with them in partnership to develop the necessary infrastructure to serve the site.
- *Green Energy* needs places to manufacture components for infrastructure, Board members expressed that the project site should have sites with capacity to serve as wind energy infrastructure manufacturing.
- Results of the development at the site need to be living wage jobs for the people of Lewis County.

## **DUE DILIGENCE**

A "due diligence" analysis was undertaken to attempt to identify critical flaws in the project and to identify project risks and possible ways they could be mitigated and managed. Factors typically identified in this type of analysis are related to cost, physical, or regulatory hurdles to making the site available and marketable to intended industrial users. Issues and considerations identified with the project site are presented in Table 13.

**Table 13 – Initial Due Diligence Review Findings**

Due Diligence Consideration	Status	Comment
Land Use Approvals	Development Areas inside the project site do not currently have industrial zoning. A part of Area 7 outside of the project site has an industrial zoning designation (RAI).	<p>An amendment to the Growth Management Act was passed by state legislature; RCW 36.70A.368 outlines actions to facilitate consideration of a Comp Plan change and designation of the site as a Master Planned Industrial Area.</p> <p>An industrial zoning designation will assure a firm that they are locating in a community that wants industrial activity.</p>
Interstate Access	Primary access to I-5 is through Centralia.	<p>Operational and physical improvements may be considered to facilitate truck traffic from the site to I-5 on County and City roads.</p> <p>Several improvements to I-5 are planned or underway.</p> <p>The transportation chapters of this report documents traffic management options and infrastructure improvements that could aid in facilitating access from the site to I-5.</p> <p>At this point, there appear to be options for addressing problem intersections and providing access that allows site development, such as shift management and freight route designations.</p> <p>A North County interchange and access road are desirable to support long term site development, but do not appear at this point to be critical needs for project success.</p> <p>WSDOT is nearing completion of the first phase of a study to determine the feasibility of the North County interchange, and upon findings will determine if appropriate to move forward with the 2<sup>nd</sup> phase of the study.</p> <p>Low cost improvements to facilitate use of parallel routes to I-5, if required, are identified in this report.</p>

Due Diligence Consideration	Status	Comment
On-Site Road Compatibility with On-Site uses	<p>The site currently has unpaved on-site roads used for past coal mining hauling and current reclamation activities. TransAlta may require some of the on-site roads to remain to facilitate coal mining and energy production operations on the site to the south. Future mine access is likely to primarily use routes that will not affect industrial development areas.</p> <p>The project site may be able to facilitate the development of Areas 1, 2, 3, and 4 with access from Big Hanaford Road.</p>	<p>The development will require on-site roads to be developed to facilitate large truck traffic. Mine reclamation and future operation may restrict uses of some existing roads.</p> <p>Routes have been identified that provide access to sites during the first and second phase without conflict with mining or reclamation operations.</p>
Topography	Topography of development sites is sloped or benched.	Topography may favor users can utilize sloped sites (with 40 to 60 acre benched areas) or that are willing to undertake substantial land leveling costs. Sloped nature of development areas is not seen as a major constraint as many users need only 500,000 to a million square feet of level area for the main manufacturing purpose and may be able to use a separate bench for uses such as secondary or support processes and parking.
Rail Access	TransAlta Spur is adjacent to site. Rail Access is shared with TransAlta and would be limited to times that would not conflict with TransAlta's coal unloading operations.	Options have been identified with a range of costs and service levels to allow a range of rail access to site development areas to meet user needs. Options range from cooperative use of the TransAlta spur to independent construction for large scale industrial operations.
Water	Water may be available on site for short term use from the TransAlta Operations. There are also options for water re-use.	Options have been identified with a range of costs and service levels including new wells, use of TransAlta water, connection to Centralia system, and a joint project to increase water withdrawals from Skookumchuck or its tributaries. Legislative action may also be feasible to obtain more water rights.

Due Diligence Consideration	Status	Comment
Wastewater	Public Sewer is not currently available. Sewage treatment facilities from TransAlta may be available for short term use by initial developments.	Options have been identified with a range of costs and service levels including individual on site systems for individual users, development of relatively low cost wetland or lagoon treatment for domestic waste, construction of a package plant, pre treatment requirements, and connection to Centralia system.
Energy	No distribution system, but both gas and electric utilities are readily available at the site.	Distribution system and service connections will be required.
Soil Bearing	More detailed geotechnical information regarding potential foundation costs may be available as sites become available.	Based upon reclamation activities, special foundation considerations may be required. Geotechnical reports for individual development sites will assist in assuring site and foundation stability.
Environmental: Noise, Air Quality, Vibration, Other.	Mining operations to the south at Kopiah, would require that industries not be sensitive to noise and minor vibrations due to occasional blasting and heavy truck traffic on the Main Haul road.	Best management practices are used to mitigate dust and noise from mining activities, but it may be difficult to mitigate impacts of minor vibrations for firms with very sensitive operating conditions.

## Actions to Improve Marketability

A list of actions to address the due diligence factors that could affect the feasibility of the project were developed as indicated below.

- **Obtain Zoning and Land Use Approvals:** Zoning; LCEDC should move forward with the final approval of a designation for a master planned industrial development in accordance with RCW 36.70A.368.
- **Grants:** Securing grants to fund development of infrastructure at the project site, reducing the cost to develop with capital intensive industries.
- **Develop a Water Supply:** A water source with sufficient capacity to serve the domestic and process water supply needs of industries locating at the site should be identified. Options are identified in this report.
  - Sites will be marketed to low and moderate water users by the industrial park administration.
  - For manufacturing uses the water distribution system typically is served by a water main with 50 to 55 pounds per square inch (psi) pressure rating at the site. The water main and storage capacity should be able to meet highly productive risk insurance standards (usually a fire flow of 2,000 gallons per minute for 4 hours will meet the HPR standard).
- **Develop Sewer Facility:** The sanitary sewer needs of industries will vary depending upon manufacturing processes. Connection to a sanitary sewer line is typically available at industrial sites. A waste water treatment facility with sufficient treatment capacity for the site will need to be identified. Options are identified in this report.
- **Provide Better Access to I-5:** Improve access to I-5. Address limitations in the existing truck route through the City of Centralia with enhanced truck routes designations that avoid impacting City roads. Participate in a range of improvements over the longer term. WSDOT has completed the first stage of a feasibility study for the North County Interchange and is considering options to move forward with a second study to further refine the feasibility of the North County Interchange.
  - Minimize impacts to congested areas in Centralia by enhancing access to and the use of alternate routes to I-5 and provide alternatives to congested routes
  - Sites could be marketed by the administrators to industries that are receptive to utilizing congestion management techniques (such as staggered start and stop shift times - not during peak hours) and that do not require heavy truck usage.
- **Find Users that Are Not Sensitive to Mining Operations:** Industries on the site should be compatible with the potential re-start of coal mining and reclamation operations.
- **Prepare Geotechnical Reports:** Providing estimates of future load capacity of the sites and the stability of the soil will reduce investigation costs for buyers and increase marketability.
- **End Users:** Seek users that are tolerant or even prefer sloped or benched development areas.

### **MARKETING: INTERVIEW WITH INDUSTRIAL LAND BROKER**

The more information that the entity managing the Industrial Park can provide documenting potential needs of the developer the easier it will be for the developer to determine if the site is right for them. Contact information for permitting and regulatory agencies will be important, as will the managing entities ability to build solid professional relationships with permitting agencies. Marketing materials and actions taken to address potential industrial developers concerns are indicated below:

- In order to accommodate/attract industrial developers fluid schedule demands, management of the Industrial Park should be able to provide potential tenants with a clear status of infrastructure development efforts on and off site along with information on the infrastructure that is already in place
- The management entity should be able to show tenants the improvements that have been constructed and those that are designed and permits approved. Information on financing mechanisms and funds to develop the improvements should be identified.
- Permitting is a critical issue. With fast-track schedules, potential tenants do not have the time to wait for the site to undergo a lengthy permitting process to achieve the desired use; nor do they want to assume the time and financial investments associated with general permitting for the site. The more of the permitting process completed, the more marketable the property will be. The managing entity should establish contacts with permitting agencies, develop solid working relationships, and be aware of the actions needed to efficiently process permits.
- Geotechnical issues are a concern of potential tenants. As with permitting and infrastructure, the more answers management can provide, the more attractive the property will be. If there are unanswered questions about the soil stability of the site, it will be harder for potential tenants to estimate the total cost of construction. The increase in any financial risk decreases desirability of the property. It would be advantageous if the managing entity could provide geotechnical information to potential tenants.
- Community support for the development may also increase it's attractiveness to potential tenants; companies are less likely to be interested in sites where there is significant community opposition. Some of the areas of concern that derail projects include traffic impacts, air, water, noise, lights, and wage levels, among others. Because of the relative isolation of the site, many of these factors are not likely to be problems. Also, given the projected wage levels, the type of job provided at the site is likely to be attractive to the community. The management should maintain documentation of community support - such as previous legislative work, land use approvals, newspaper articles, and public meeting minutes.
- Over the long term there may be perception that traffic impacts are a critical issue.
- Flooding is an issue now for any site in Lewis County, regardless of whether or not is has been impacted in the past. With the two major flood events in recent years, the outside perception is that development in Lewis County may be risky. Two aspects of flooding are especially important to potential tenants, one of these is the risk that the development site is subject to being flooded and the second is risk of access to the site being impacted by flooding.

## CONCLUSIONS

The 2005 *Lewis County Industrial Lands Analysis* update indicated that an inadequate supply of large scale industrial sites could affect overall sustainability of the Lewis County economy over the next 20 years; the Donna J. Batch, *Lewis County Prime Industrial Lands* study through a comparative evaluation found the project site to be the most advantageous in Lewis County for the designation of an industrial park. The *Lewis County Trans-Alta Industrial Park Feasibility Analysis* was prepared to document the need for an industrial park at the former coal mining site. Socio-economic data compiled for this report indicates a need for action to facilitate economic growth in Lewis County as it is exhibiting indicators of insufficient economic growth such as high unemployment, low personal income, high student drop out rate, and a high number of workers commuting to jobs outside of Lewis County.

No industrial parks in the Northwest market can compare with the project site, while there are a few 100-plus acre sites currently available, the site has the opportunity to develop into a large industrial hub where industries that require large sites can benefit from each other in terms of efficient use of energy and infrastructure. An industrial zoning designation of the site and subsequent development has the capacity to:

- Diversify and increase the County tax base.
- Move forward with the States goals of fostering “Green Industries”.
- Increase personal income wages in the County; in general, capital-intensive manufacturing jobs pay high individual personal income wages;
- Facilitate growth in the manufacturing sector of employment; manufacturing jobs have declined elsewhere in the state and nation, but Lewis County has been successful in facilitating this sector of employment. Manufacturing was the fastest growing sector of employment in Lewis County, adding almost 600 new jobs between 2002 and 2007.
- Provide various skill level employment opportunities to the Lewis County community to augment high wage jobs lost in other sectors, such as Natural Resources and Mining. The development of an industrial park at the site will have a “multiplier” effect creating jobs outside of the manufacturing cohort, such as in the service industry employment cohorts.
- Complement efforts to lower High School drop-out rates in the County through an emphasis on skills training that translates into the benefits from completing school.

# Chapter 1-2: Economic Feasibility

## BENEFIT COST ANALYSIS APPROACH

### Benefit (Public)

Using the IMPLAN economic modeling software, an estimate of the direct number of jobs created, the types of jobs created, and expected wages have been modeled. The model includes multiplier effects of jobs and wages across the wider community.

This chapter presents the economic benefits to Lewis County and the region and the costs associated with developing infrastructure for an Industrial Park. Economic feasibility of the Industrial Park is documented in this section of the report; aspects of the project have been examined in economic terms to provide a basis for evaluation. The analysis of economic feasibility includes estimating the economic impact of the proposed development and examining the financial benefit minus cost.

The goal of the economic impact benefits analysis is to provide information on the types of jobs, wages, and taxes that might be created by new industries locating at the project site. The economic benefits are then compared with the estimated cost associated with developing infrastructure serving the site.

### Cost

An Opinion of Probable Costs (OPC) was prepared to quantify and apply costs to a conceptual Master Plan. The OPC is based upon recent experience with construction activities of similar nature and includes a breakdown of infrastructure costs associated with currently identified on-site and off-site infrastructure needs. Assumptions used in cost estimating are based on WSDOT Unit Bid Analysis, (Southwest Region), Huitt-Zollars' project history and previous studies of the project site.

### **CONCEPTUAL MASTER PLAN**

To assist in identifying anticipated development costs of infrastructure serving the seven development areas at the Industrial Park, a conceptual master plan was completed. The conceptual master plan included a technical study of infrastructure typically required to support capital intensive industries at the Industrial Park. The plan illustrates a conceptual level backbone infrastructure plan for off-site and on-site improvements.

Infrastructure improvements and currently identified costs for the Industrial Park conceptual master plan documented in the following chapter include: **(1) Transportation, (2) Wastewater, (3) Water, (4) Storm Drainage, (5) Dry Utilities.**

# BENEFITS

This section presents estimates of economic benefits of industrial development at the project site. Based on findings of previous reports and analysis, the target market for development at an industrial park on the project site is the capital intensive manufacturing sector, especially those types of operations requiring large parcels of land (100-acre or greater).

## Assumptions

Large industrial manufacturing plants can be difficult to site, due to unavailability of large parcels near urban centers and existence of incompatible neighboring uses. The project site is in many ways ideal for this type of development, due to both the amount of land available and to lack of neighboring uses. Also, Lewis County has the necessary labor capital equipped with the skills required of capital intensive industries due to the comprehensive training programs supported by the LCEDC, such as Worksource Lewis County and the Pacific Mountain Partnership.

In order to estimate the economic impact of a large lot (100-acre or greater) industrial park, BST Associates created a model that takes into account a number of factors, including:

- employment density,
- average wages,
- absorption,
- economic impact multipliers, and
- tax rates.

### ***EMPLOYMENT DENSITY***

Employment density is a measure of the average number of employees on each acre of land, and it varies widely across industry and building types. For this analysis a number of industrial and land use reports were reviewed to determine an estimated employment density.

The Lewis County Prime Industrial Lands Study prepared by Donna J. Batch in February of 1999 included a Transportation Assessment. For the purpose of determining the total number of employees that could potentially be generating trips at the site, SCA Engineering utilized an expected employee density of 4.5 employees per acre to configure the possible traffic generated by industrial development at the project site.

The Columbia River Economic Development Council (CREDC) Industrial Lands Report, November 2000 documented industrial land employment densities. The data incorporated in the industrial lands report was from a 1994 inventory of industrial employers in Clark County. The inventory was done by the CREDC in conjunction with the Washington State Department of Employment Security to estimate the industrial land employment densities; the survey revealed that Clark County's industrial densities averaged between 2 and 13 employees (low average of 2, middle average of 8 and a high average of 13).

Another source of data used to arrive at an assumption of employees density at the site was a previous study completed by Huitt-Zollars for the Port of Chehalis. To determine the domestic water supply needed to serve the Curtis Site, Huitt-Zollars obtained industrial employment per acre data from the Lewis

County Economic Development Council. The data documented requests received by the LCEDC from rail dependent industrial development operations. The information documents one site with a comparable lot size of a development area at the project site. The Truss Manufacturer, which was a 200 acre site with 300 jobs, yielded an average of 1.50 jobs per acre.

**Table 14 –Request for Site Information Submitted to LCEDC from Rail Dependent Tenants**

Company Type	Jobs	Acreage	Jobs per Acre
Truss Manufacturer	300	200	1.50
Plywood Manufacturer	250	55	4.50
Flat Glass Manufacturer	200	50	4.00
Wood Products Manufacturing	131	35	3.70
Warehouse Distribution	105	30	3.50
Polyurethane Foam Manufacturer	100	30	3.33
Tank Manufacturer	100	25	4.00
Industrial Gas Fill Plant	35	20	1.75
Composite Board Manufacturer	90	20	4.50
Food Processor	250	18	13.80
Truck Components	30	10	3.00
Total	1,591	493	3.22

Source: Curtis Development, Proposed Industrial Development District Development Plan, Port of Chehalis, March 1999

Lower numbers per acre are to be expected with capital intensive manufacturing uses. Large lot (100 acres plus) in rural areas typically have less employees per acre than small lot urban industrial developments. For this analysis, a range of between 2 and 8 employees per acre was used, with the lower estimated considered the most likely.

### **AVERAGE WAGES**

The expected average wages at the site were calculated using manufacturing employment and wage data from the State of Washington. In order to arrive at the wage levels used as inputs to the model, the statewide averages were adjusted in two ways.

First, data for the petroleum/coal industry along with the transportation equipment industry were excluded from statewide averages. The petroleum/coal and the transportation industry data includes oil refineries on north Puget Sound and Boeing, these industries typically pay wages substantially higher than other manufacturing industries so they were excluded from the average wage.

Second, the average wage for manufacturing in Lewis County was compared to that of Washington State, at the 3-digit NAICS code level of detail. According to statistics from the Washington State Department of Labor, manufacturing wages in Lewis County range between 45% and 75% of the state average, depending on the NAICS industry. As a conservative approach, the model assumes that wages in the proposed development will fall into this existing range.

Based on these adjustments, impact estimates assume wages will average between \$42,387 per year (45<sup>th</sup> percentile) and \$54,284 per year (75<sup>th</sup> percentile).

**ABSORPTION**

One of the more difficult assumptions to estimate is the absorption rate for a piece of property. This is especially the case when the property is large and intended for a relatively narrow range of uses, as is the case with the project site.

The site is approximately 2,750 acre, with approximately 1,000 useable acres for industrial development pads. The assumption used in this draft analysis is that the 1,000 acres will be absorbed over a twenty-year period. The model also assumes that property will be absorbed in 100-acre increments, with one sale or lease occurring every two years. Employment is assumed to begin in 2012, with absorption complete in 2030.

**ECONOMIC IMPACT MULTIPLIERS**

Based upon the direct impacts, BST Associates estimated the indirect and induced impacts using the IMPLAN model, an input-output model which estimates the multiplier effects of inter-industry purchases. Indirect impacts refer to expenditures by the user/tenant on outside goods and services. Induced impacts refer to purchases based on the employment earnings from direct and indirect economic activities. As wages are paid out, workers' families spend their income on a wide array of goods and services, much of which are supplied by the local economy.

Total impacts incorporate the sum of direct, indirect, and induced impacts. It is important to note that these effects are limited for any region because of spending "leakages" at each round of inter-industry and household purchases. That is, the goods and services required at each stage are partly purchased from outside the study area, thus reducing the total supplies provided locally.

An economic multiplier summarizes the total impact that can be expected from change in a given economic activity. For this analysis, multipliers were developed for three levels of geography: Lewis County, the local region, and Washington State. The local region was defined as Lewis County plus those counties nearest Lewis County and west of the Cascade Mountains, i.e. Thurston, Mason, Grays Harbor, Pacific, and Cowlitz.

**Table 15 –Economic Impact Multipliers**

Type	Lewis County	Region	Washington
Employment	1.752	1.910	2.104
Income	1.589	1.695	1.925
Output	1.439	1.439	1.579

Source: IMPLAN, BST Associates

These multipliers indicate that for every job created, an additional 0.752 jobs are created in Lewis County, an additional 0.910 jobs are created in the region, and an additional 1.104 jobs are created in Washington State. The multipliers for income and output function work in a similar manner.

The industry groups used to develop these multipliers included all manufacturing, with the exception of food processing and textiles. It is important to note that the full multiplier effect assumes that the jobs created are new and not simply transferred within the county, region, or state.

### TAX RATES

The Tax Foundation (a nonprofit fiscal policy research group) estimates the percentage of income taxpayers in each state pay in state and local taxes. Every tax collected on both state and local level is included in the calculation: income taxes on individuals and businesses; general sales taxes; product specific taxes such as those levied on gas, cigarettes and alcohol; property taxes on individuals and business; and others. According to the Tax Foundation, WA State residents paid approximately 8.9% of their personal income (average of \$48,574) in state and local taxes.

**Table 16 –State & Local Tax Burden**

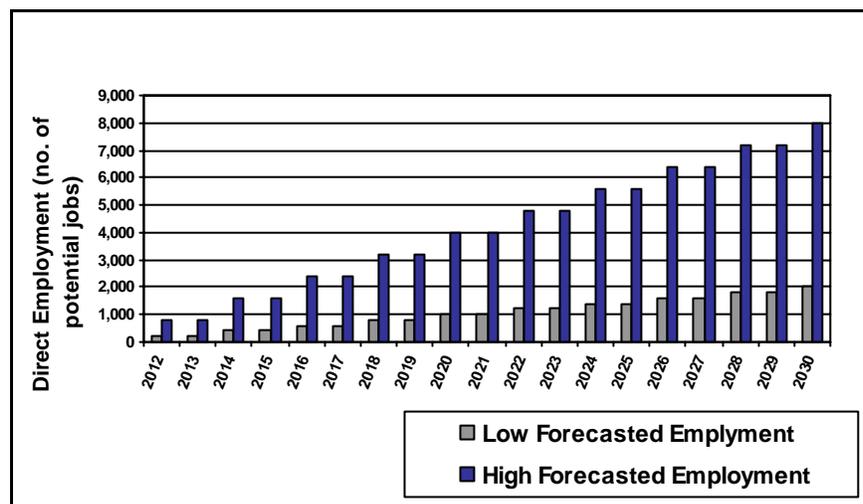
Tax Burden Based on WA State Per Capita Income of \$48,574	Payments Per Capita	Rate
Per Capita Taxes Paid to Home State	\$2,957	6.1%
Per Capita Taxes Paid to Other States	\$1,377	2.8%
Total State and Local Per Capita Taxes Paid	\$4,334	8.9%

Source: Tax Foundation

### Forecasted Benefits

Based on the assumption of there being 1,000 acres at the site for development and employment density of between 2 and 8 employees per acre, BST Associates forecasted that by 2030 (complete absorption at the industrial park) the project site could support between 2,000 and 8,000 direct jobs.

**Figure 8 – Estimated Direct Employment**



Source: BST Associates

Based on the wage assumptions described above, the 2,000 to 8,000 jobs projected at an industrial park at the project site in 2030 are projected to produce direct income of between \$84 million and \$432 million in current dollars.

**Table 17 –Economic Impact Multipliers**

Type	Lewis County	Region	Washington
<b>Employment</b>			
Direct Impact – Low	2,000	N/A	N/A
Total Impact - Low	3,505	3,820	4,208
Direct Impact - High	8,000	N/A	N/A
Total Impact - High	14,020	15,281	16,833
<b>Income (\$ millions)</b>			
Direct Impact– Low	\$84.0		
Total Impact - Low	\$133.5	\$142.4	\$161.7
Direct Impact– High	\$432.0	N/A	N/A
Total Impact - High	\$686.6	\$732.4	\$831.5

**TAX IMPACT**

Assuming an 8.9% state and local tax burden (as indicated by the Tax Foundation), the taxes generated by employees’ income at full build-out are estimated to average between \$11.9 million and \$61.1 million per year.

In addition to the taxes on the income of workers, the tenants are likely to be subject to the state Business & Occupation (B&O) tax. Almost all businesses located or doing business in Washington are subject to the B&O tax, which is calculated on gross income, and which has no deductions for labor, materials, taxes, or other costs of doing business.

For manufacturing firms in Washington (excluding the petroleum/coal industry and transportation equipment manufacturing) the average B&O tax per employee averaged \$541 in 2007. Assuming total employment at build out ranging between 2,000 and 8,000 jobs, the total B&O tax generated by firms at the site is estimated to range from approximately **\$1.1 million** to **\$4.3 million** (current) dollars.

**Cost**

There are numerous options for providing sewer, water, and transportation services to the project site. A full discussion of infrastructure costs and options is included in Chapter 2-3. Only capital costs are

considered in this report. Operational costs are not shown as they are assumed to be covered by payments to the operating entity (TransAlta, City of Centralia, future park management organization etc).

For purposes of preparing a benefit cost analysis, it was necessary to select a combination of capital improvement options for infrastructure service. Table 20, *Summary of Infrastructure Options for Project Site* summarizes options described in Chapter 2-3. Highlighted options were selected to represent a possible combination of infrastructure improvements as a basis for an opinion of probable cost for the benefit cost analysis. This selection is not intended to represent a recommendation, but does provide a means to help assess project feasibility. The selection generally follows a middle cost option rather than lowest cost option. Different service options than those used in this analysis may be chosen in some cases without dramatically affecting project costs.

This plan is intended to provide a basis for discussion among potential service providers. There may be benefits to regional service providers that would influence costs and selections made for final service.

Costs presented in this report are preliminary. No design or detailed analysis was performed. Costs should be considered as mid point of a range which could vary substantially from number shown due to unknown or unanticipated factors. Where a cost range is shown in Chapter 2-3, the high end of range is generally used here. Timing of improvements is not fixed but will depend on tenants and supply options. Cost of "dry" utilities (electricity, gas and telecommunications) is not included in this analysis. The assumption used is that cost of extending these services will be included in rates charged to users.

**Table 18 –Potential Industrial Park Infrastructure Budget \***

Item	Phase 1	Phase 2	Phase 3	Item Total
<b>On-Site</b>				
Roads	\$1.0	\$8.2	\$6.8	\$16.0
Rail	\$2.9	\$6.0	\$0.0	\$8.9
Water	\$6.2 <sup>2</sup>	\$2.8	\$6.3	\$15.3
Sewer	\$2.9 <sup>3</sup>	\$11.0	\$7.8	\$21.7
Storm	\$0.0	\$0.0	\$0.0	\$0.0
<b>Off-Site</b>				
Roads	\$0.0	\$0.0	\$0.0	\$0.0
Rail	\$0.0	\$0.0	\$0.0	\$0.0
Water	\$0.0	\$5.4	\$0.0	\$5.4
Sewer	\$0.0	\$0.0	\$0.0	\$0.0
<b>Total</b>	<b>\$13.0</b>	<b>\$33.4</b>	<b>\$20.9</b>	<b>\$67.3</b>

\* See Table 20 and Chapter 2-2 for Item description. Costs are in millions of dollars

\*\* Timetable Assumptions:

- Phase 1: 1to 5 years
- Phase 2: 6 to10 years

<sup>2</sup>\$750,000 allowed for construction of connection to TransAlta water treatment plant.

<sup>3</sup> \$1 Million dollars allowed for connection to TransAlta sanitary sewer facility.

- Phase 3: 11 to 20 plus years

At full build out, infrastructure costs of the project are estimated to total approximately \$67.3 million. When fully occupied with tenants, the project site is estimated to generate \$1.1 million to \$4.3 million per year in Business and Occupation Tax (B&O). The estimated number of jobs created at the site ranges between 2,000 and 8,000, with a total employment impact in Lewis County of 3,500 to 14,000 jobs. The income generated by jobs at the project site is estimate to range between \$84 million and \$432 million, with total countywide income of \$133 million to \$687 million. The income tax generated by this payroll is estimate to range between \$11.9 million and \$61.1 million.

**Table 19 –Estimated Benefits v. Probable Costs for Development of Infrastructure Serving the Site**

Benefit Type	Lewis County Benefits at Full Build-Out		Opinion of Probable Cost for Infrastructure
	Low	High	
Direct Employment	2,000	8,000	
Total Employment	3,505	14,020	
Direct Income (Millions)	\$84	\$432	
Total Income (Millions)	\$133.5	\$686	
B&O Tax (Millions)	\$1.1	\$4.3	
Income Tax (Millions)	\$11.9	\$61.1	
Phase 1 (Millions)			\$13.0
Phase 2 (Millions)			\$33.4
Phase 3 (Millions)			\$20.9
Total - All Phases (Millions)	\$230.5	\$1,183.4	\$67.3

**Table 20 –Summary of Infrastructure Options for Project Site**

	<b>PHASE 1: Development Area 1, 2, 3 (Approximately 420 Developable Acres)</b>	<b>Phase 2 Development Area 4 (Approximately 140 Developable Acres)</b>	<b>PHASE 3: Development Area 5, 6, 7 (Approximately 420 Developable Acres)</b>
On-Site <sup>4</sup>			
Roads	<p>Lowest cost: <b>Site access from Big Hanaford Road directly to Areas 1, 2, and 3. Construct Entry signage.</b></p> <p>Option 1: <b>Construct Part of Road A (5,700 linear feet) to provide enhanced access development, depending on industry needs.</b></p>	<p>Lowest cost: <b>Site access from Big Hanaford Road directly to Area 4.</b></p> <p>Option 1: <b>Extend Road A from Areas 2 and 3, south to Area 4. (7,000 linear feet.) If no part of Road A was constructed in Phase 1, approximately 12,700 linear feet will be required.</b></p>	<p>Lowest Cost: <b>Construct Road B from Big Hanaford Road south to Area 1, 7, 5 and 6. (10,650 linear feet.)</b></p>
Rail	<p>Lowest Cost: <b>No Rail Extension</b></p> <p>Option 1: <b>Extend TransAlta Spur to site edge (2,400 linear feet)</b></p> <p>Option 2: <b>Construct new spur to bypass TransAlta unloading area (7,800 linear feet)</b></p> <p>Option 3: <b>Level sites 1-3 to allow enhanced rail access.</b></p>	<p>Lowest Cost: <b>Rail Service not provided to Area 4</b></p> <p>Option 1: <b>Provide a shared loading/unloading facility for the project in conjunction with spur extension.</b></p>	<p>Lowest Cost: <b>Rail Service not provided to Area 5, 6, 7</b></p> <p>Option 1: <b>Provide a shared loading/unloading facility for the project in conjunction with spur extension..</b></p>
Water	<p>Lowest Cost: <b>On-Site wells</b></p> <p>Option 1: <b>Assume water supplied by TransAlta - Construct water main to an assumed connection point (5,600 linear feet). Construct phase 1 water storage tank</b></p>	<p>Lowest Cost: <b>On-site wells</b></p> <p>Option 1: <b>Construct approximately 11,400 linear feet of water main to assumed connection point near TransAlta power Plant.</b></p>	<p>Lowest Cost: <b>On site wells</b></p> <p>Option 1: <b>Extend water main to an assumed connection point (9,100 linear feet) Construct phase 2 water storage tank.</b></p>
Sewer	<p>Lowest Cost: <b>On site disposal</b></p> <p>Option 1: <b>Assume wastewater treatment at TransAlta treatment facility. Construct sanitary sewer conveyance to the TransAlta treatment facility. (5,600 linear feet).</b></p>	<p>Lowest Cost: <b>On site disposal</b></p> <p>Option 1: <b>Construct sanitary sewer main to connection point near TransAlta power plant. (11,400 linear feet)</b></p> <p>Option 2: <b>Construct phase 1 of package Treatment Plant</b></p>	<p>Lowest Cost: <b>On site disposal</b></p> <p>Option 1: <b>Construct sanitary sewer main to connection point near TransAlta power plant. (9100 linear feet)</b></p> <p>Option 2: <b>Construct phase 2 of package Treatment Plant</b></p>
Storm	<p>Lowest Cost: <b>On-Site Available</b></p>	<p>Lowest Cost: <b>On-Site Available</b></p>	<p>Lowest Cost: <b>On-Site Available</b></p>

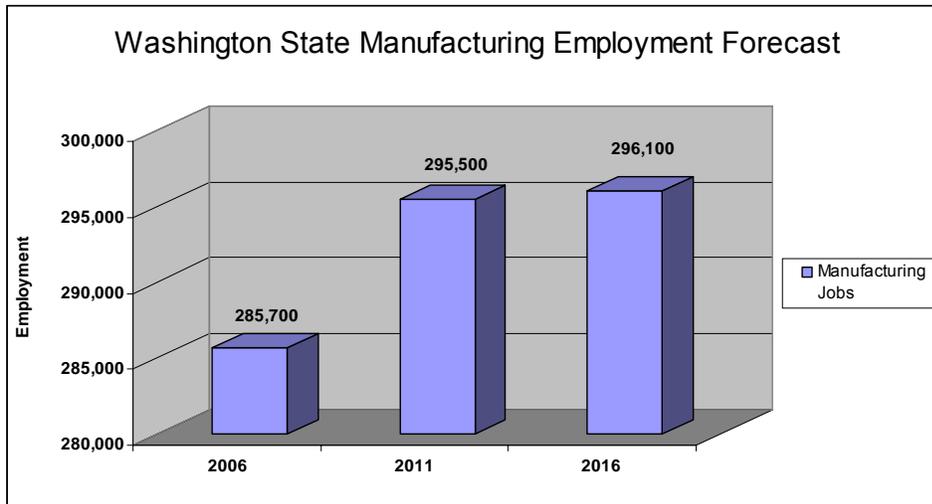
<sup>4</sup> Connection to TransAlta facilities or construction of facilities at the edge of the project is considered on-site.

	<b>PHASE 1: Development Area 1, 2, 3 (Approximately 420 Developable Acres)</b>	<b>Phase 2 Development Area 4 (Approximately 140 Developable Acres)</b>	<b>PHASE 3: Development Area 5, 6, 7 (Approximately 420 Developable Acres)</b>
Off-Site			
Roads	Lowest Cost: <b>Congestion management practices.</b>	Lowest Cost: <b>Congestion management practices.</b>  See: <b>Transportation section for improvements proposed by others and other potential mitigation measures.</b>	Lowest Cost: <b>Congestion management practices.</b>  See: <b>Transportation section for improvements proposed by others and other potential mitigation measures.</b>
Rail	Lowest Cost: <b>No off-site rail improvements.</b>  Option 1: <b>Construct 3.6 mile spur to bypass much of the TransAlta spur</b>	See: <b>Phase 1 rail and onsite rail portion of this phase.</b>	See <b>Phase 1 rail and onsite rail portion of this phase</b>
Water	Lowest Cost: <b>No off site improvements</b>  Option 1: <b>Construct a connection the City of Centralia system.</b>	Lowest Cost: <b>No off site improvements</b>  Option 1: <b>Construct a connection the City of Centralia system.</b>	Lowest Cost: <b>No off site improvements</b>  See <b>Phase 2 off-site water</b>
Sewer	Lowest Cost: <b>No off site improvements</b>  Option 1: <b>Connect to City of Centralia system</b>	Lowest Cost: <b>No off site improvements</b>  Option 1: <b>Connect to City of Centralia system</b>	Lowest Cost: <b>No off site improvements</b>  Option 1: <b>Connect to City of Centralia system</b>

# CHAPTER 1-3: MARKET FEASIBILITY

Washington State has forecasted a rise in manufacturing employment between 2006 and 2016; an estimated 10,400 new manufacturing jobs are anticipated by 2016. The goal of an industrial park at the project site is to absorb some of these new positions as well as attract existing jobs that are displaced from other communities.

**Figure 9 – Washington State Manufacturing Employment Forecast**



Source: Washington Department of Labor

## POTENTIAL CUSTOMER BASE

The market identified for the project site is capital intensive heavy industry, especially those involved in manufacturing. A number of sources were used to define market needs for manufacturing facilities, including data from Dun & Bradstreet, the BC Manufacturer's Directory, and Conway Data, as well as interviews and other sources. Target manufacturing market clusters identified for the project site include:

- Established Manufacturing Sectors
- Green Building Material and Green Power Components Manufacturing
- Eco-Industrial Parks
- Some highlights of advantages of the project site include:
  - Washington State has a higher than average level of exports.
  - Washington State has strong relationships with countries such as China, Canada, Japan, India, South Korea, and Taiwan.
- Lewis Count has a nearby labor force and training programs in place. This labor force is supported by a large pool of nearby technical experts in computers and engineering.
- By-products from the power plant adjacent to the project site could form the seed for an eco-industrial park that recycles such material such as ash, heat, and CO2 into building products such

as drywall, concrete products, and shingles.

- Large site could support manufacturing for emerging green industry components such as wind generators, advanced batteries, and solar energy.
- The site is well suited to support some of the largest segments of manufacturing in Washington, including transportation equipment, lumber, and wood products, printing and publishing, rubber and plastics, stone, clay, glass, concrete products, fabricated metal products, industrial and commercial machinery, and computer equipment and instruments.

## Industrial Tenants

In determining types of tenants best be suited for an industrial park at the project site, we made the assumption that capturing demand from expanding local industries is one important component of the marketing plan. Marketing efforts should not be limited to recruitment of new firms, but should incorporate both retention of existing firms (in the region) and the recruitment of new firms. Key goals of the marketing effort should include:

- Attracting industry to the site that is currently located in the Vancouver, BC area and is expanding its sales to the US to the point that a 100(+) acre US manufacturing site is feasible.
- Attracting firms currently located in the Seattle and Portland metropolitan markets that wish to remain in the region but face pressure at their current locations.
- Attracting industries with international customer bases and that are planning to develop a new large manufacturing facility.
- Attracting industries that would benefit from the use of coal combustion by-products from the TransAlta Centralia Operations facility adjacent to the project site.

Both the Dun & Bradstreet data and the BC Manufacturer's Directory data were used to identify types of manufacturers that already exist in the Pacific Northwest. Existing industrial land is under pressure to convert to other non-industrial uses, especially in the population centers of the Pacific Northwest, which presents an opportunity to attract firms from these high density population centers to Lewis County, and specifically the industrial park at the project site. Using the Conway Data, we were able to identify types of industries that have made recent investments in plants, in order to further refine a list of target industries.

The Dun & Bradstreet data documents all manufacturing firms located in Washington and Oregon and have 100 employees or more. The list included 883 firms with a total employment of nearly 240,000. The data indicates that approximately 57% of the firms and 55% of the jobs are in Washington. Nearly half of the manufacturing jobs in Oregon and Washington are related to one of three industries: (1) transportation equipment, (2) lumber & wood products, and (3) food & kindred products.

**Table 21 – Manufacturing in Oregon and Washington**

SIC	Description	Employees			Number of Firms		
		Ore.	Wash.	Total	Ore.	Wash.	Total
20	Food And Kindred Products	16,125	17,199	33,324	50	76	126
21	Tobacco Products	-	100	100	-	1	1
22	Textile Mill Products	-	525	525	-	3	3
23	Apparel And Other Finished Products	943	1,695	2,638	4	10	14

SIC	Description	Employees			Number of Firms		
		Ore.	Wash.	Total	Ore.	Wash.	Total
	Made From Fabrics And Similar Materials						
24	Lumber And Wood Products, Except Furniture	21,480	11,179	32,659	92	63	155
25	Furniture And Fixtures	1,525	1,600	3,125	9	11	20
26	Paper And Allied Products	3,498	3,784	7,282	16	20	36
27	Printing, Publishing, And Allied Industries	6,344	7,245	13,589	28	34	62
28	Chemicals And Allied Products	522	2,815	3,337	4	11	15
29	Petroleum Refining And Related Industries	473	1,069	1,542	2	4	6
30	Rubber And Miscellaneous Plastics Products	7,767	4,903	12,670	11	26	37
32	Stone, Clay, Glass, And Concrete Products	1,128	3,347	4,475	7	18	25
33	Primary Metal Industries	4,608	4,192	8,800	17	14	31
34	Fabricated Metal Products, Except Machinery And Transportation Equipment	4,780	6,138	10,918	24	34	58
35	Industrial And Commercial Machinery And Computer Equipment	8,204	13,294	21,498	31	45	76
36	Electronic And Other Electrical Equipment And Components, Except Computer Equipment	9,551	8,112	17,663	29	30	59
37	Transportation Equipment	14,471	31,155	45,626	30	64	94
38	Measuring, Analyzing, And Controlling Instruments; Photographic, Medical And Optical Goods; Watches	5,422	9,617	15,039	17	30	47
39	Miscellaneous Manufacturing Industries	1,749	2,383	4,132	8	10	18
	Total	108,590	130,352	238,942	379	504	883

Source: Dun & Bradstreet

A number of factors, including increasing land values, incompatible surrounding uses, and urban traffic congestion, have made the dense urban population centers in Washington and Oregon less attractive to manufacturing industries. Manufacturing firms located in these population centers represent an important market for the project site.

Table 22 presents a breakdown of the location of large manufacturing firms in Washington and Oregon, assigning each firm to one of four regions: (1) Seattle ("SEA"), (2) Portland ("PDX"), (3) Other Washington, (4) and Other Oregon. The Seattle area is defined as King, Pierce and Snohomish County. The Portland area is defined as Clackamas, Multnomah, and Washington County in Oregon, as well as Clark County, Washington (these are firms with 100 or more employees apiece).

As shown in the table, for most manufacturing sectors the majority of both firms and jobs are located in Seattle or Portland. In almost half of the manufacturing sectors, three-fourths of employment or more is concentrated in these two cities. The largest numbers of jobs are in industrial machinery, transportation equipment, scientific instruments, and electronic equipment.

Several other sectors are not as concentrated in the cities, but still have a large number of employees, including lumber and wood products, food products, printing and publishing, and fabricated metal products.

**Table 22 – Manufacturing in Oregon and Washington**

SIC	Firms					Employment				
	SEA	PDX	Other WA	Other OR	Total	SEA	PDX	Other WA	Other OR	Total
20	42	20	32	32	126	8,900	4,931	7,599	11,894	33,324
21	-	-	1	-	1	-	-	100	-	100
22	-	2	1	-	3	-	405	120	-	525
23	9	4	-	1	14	1,565	933	-	140	2,638
24	18	14	43	80	155	2,521	3,733	8,448	17,957	32,659
25	9	8	1	2	20	1,290	1,195	165	475	3,125
26	6	11	10	9	36	959	1,480	2,312	2,531	7,282
27	19	14	15	14	62	4,315	3,199	2,930	3,145	13,589
28	6	2	5	2	15	2,010	280	805	242	3,337
29	1	2	3	-	6	159	473	910	-	1,542
30	15	10	8	4	37	3,148	7,358	1,349	815	12,670
32	8	3	10	4	25	1,750	520	1,597	608	4,475
33	2	11	12	6	31	610	2,952	3,582	1,656	8,800
34	18	19	14	7	58	3,093	3,051	2,770	2,004	10,918
35	30	25	11	10	76	8,625	9,094	1,944	1,835	21,498
36	16	30	7	6	59	3,097	10,375	2,064	2,127	17,663
37	40	15	22	17	94	26,191	8,660	4,424	6,351	45,626
38	21	15	7	4	47	6,517	5,295	2,410	817	15,039
39	8	4	2	4	18	2,078	929	305	820	4,132
Total	268	209	204	202	883	76,828	64,863	43,834	53,417	238,942
Share of Total										
20	33%	16%	25%	25%		27%	15%	23%	36%	
21	0%	0%	100%	0%		0%	0%	100%	0%	
22	0%	67%	33%	0%		0%	77%	23%	0%	
23	64%	29%	0%	7%		59%	35%	0%	5%	
24	12%	9%	28%	52%		8%	11%	26%	55%	
25	45%	40%	5%	10%		41%	38%	5%	15%	
26	17%	31%	28%	25%		13%	20%	32%	35%	
27	31%	23%	24%	23%		32%	24%	22%	23%	
28	40%	13%	33%	13%		60%	8%	24%	7%	
29	17%	33%	50%	0%		10%	31%	59%	0%	
30	41%	27%	22%	11%		25%	58%	11%	6%	
32	32%	12%	40%	16%		39%	12%	36%	14%	
33	6%	35%	39%	19%		7%	34%	41%	19%	
34	31%	33%	24%	12%		28%	28%	25%	18%	
35	39%	33%	14%	13%		40%	42%	9%	9%	
36	27%	51%	12%	10%		18%	59%	12%	12%	
37	43%	16%	23%	18%		57%	19%	10%	14%	
38	45%	32%	15%	9%		43%	35%	16%	5%	
39	44%	22%	11%	22%		50%	22%	7%	20%	
Total	30%	24%	23%	23%		32%	27%	18%	22%	

Source: Dun & Bradstreet

Another pool of industrial firms that may represent potential users of the project site is manufacturers in British Columbia. The Province of British Columbia produces a database of these firms, called the “BC Manufacturer’s Database”. Analysis of this data set shows that there are more than 137,000 manufacturing jobs in British Columbia.

**Table 23 – Manufacturing in British Columbia**

NAICS 3d	NAICS3d Description	Cariboo	Kootenay	Nechako	North Coast	Northeast	Thompson / Okanagan	Vancouver Island / Coast	Mainland / Southwest	Total
311	Food Manufacturing	18	98	10	52	11	1,089	2,034	11,673	14,985
312	Beverage and Tobacco Product Manufacturing	5	146				575	155	3,590	4,471
313	Textile Mills		-						23	23
314	Textile Product Mills		-	-	-		71	126	785	982
315	Apparel Manufacturing	2	42				25	37	2,209	2,315
316	Leather and Allied Product Manufacturing		3	-			5	20	96	124
321	Wood Product Manufacturing	4,968	2,353	1,028	73	11	3,794	4,140	22,839	39,206
322	Paper Manufacturing	1,273	675		550		226	490	5,620	8,834
323	Printing and Related Support Activities	104	68	-	11	5	500	161	2,885	3,734
324	Petroleum and Coal Products Manufacturing	80	125		23	80	40	60	189	597
325	Chemical Manufacturing	66	21	58			165	126	3,326	3,762
326	Plastics and Rubber Products Manufacturing		5				594	278	3,455	4,332
327	Nonmetallic Mineral Product Manufacturing	46	156	317	-	45	883	333	2,810	4,590
331	Primary Metal Manufacturing		1,641		1,611		168	26	1,951	5,397
332	Fabricated Metal Product Manufacturing	498	143	22	85	171	1,625	851	7,973	11,368
333	Machine Manufacturing	284	141		11	55	470	868	8,115	9,944
334	Computer and Electronic Product Manufacturing	17	22				351	402	3,952	4,744
335	Electrical Equipment, Appliance, and Component Manufacturing		6			7	334	119	1,961	2,427
336	Transportation Equipment Manufacturing	42	415		20		2,391	1,106	4,316	8,290
337	Furniture and Related Product Manufacturing	26	29	10			526	444	2,387	3,422
339	Miscellaneous Manufacturing	10	64		1		600	284	3,243	4,202
		7,439	6,153	1,445	2,437	385	14,432	12,060	93,398	137,749

Source: BC Manufacturer’s Directory

The largest share of jobs (nearly one out of three) is in the wood product manufacturing industry. Other manufacturing sectors that generate large numbers of jobs include food manufacturing and fabricated metal products manufacturing, each of which has more than 11,000 jobs. Machinery manufacturing generates nearly 10,000 jobs and paper manufacturing represents nearly 9,000 jobs (British Columbia data uses the NAICS industry classification instead of the SIC classification used by Dun & Bradstreet).

Like Oregon and Washington, a substantial share of manufacturing employment in British Columbia is concentrated in the population center around Vancouver. More than two-thirds of all manufacturing employment is located in the Mainland/Southwest development region, which is anchored by Vancouver.

The BC Manufacture's Database contains information on whether or not the firms currently export or plan to, as well as the countries to which they do export or will begin exporting operations. Those firms that export or plan to export to the United States and which are located in the Mainland/Southwest development region represent the strongest potential market for the site. The following table presents a summary of the number of firms and employment.

**Table 24 - Number of Exporting Firms by Size of Employment Southwest / Mainland Region, Exporters to US**

NAICS3d	NAICS3d Description	50 to 99	100 to 199	200 to 499	500 to 999	1000 and over	Total
311	Food Manufacturing	4	2	4	1	1	12
312	Beverage and Tobacco Product Manufacturing	0	0	0	0	0	0
313	Textile Mills	0	0	0	0	0	0
314	Textile Product Mills	0	0	0	0	0	0
315	Apparel Manufacturing	3	2	0	0	0	5
316	Leather and Allied Product Manufacturing	0	0	0	0	0	0
321	Wood Product Manufacturing	2	1	0	0	0	3
322	Paper Manufacturing	2	2	0	0	0	4
323	Printing and Related Support Activities	4	2	2	0	0	8
324	Petroleum and Coal Products Manufacturing	0	0	0	0	0	0
325	Chemical Manufacturing	0	1	0	0	0	1
326	Plastics and Rubber Products Manufacturing	6	0	0	0	0	6
327	Nonmetallic Mineral Product Manufacturing	4	6	2	0	0	12
331	Primary Metal Manufacturing	2	1	0	0	0	3
332	Fabricated Metal Product Manufacturing	14	2	0	0	0	16
333	Machinery Manufacturing	2	3	1	0	0	6
334	Computer and Electronic Product Manufacturing	4	2	0	0	0	6
335	Electrical Equipment, Appliance, and Component Manufacturing	1	0	0	0	0	1
336	Transportation Equipment Manufacturing	1	1	0	0	0	2
337	Furniture and Related Product Manufacturing	1	2	0	0	0	3
339	Miscellaneous Manufacturing	2	2	1	0	0	5
<b>Totals</b>		<b>52</b>	<b>29</b>	<b>10</b>	<b>1</b>	<b>1</b>	<b>93</b>

Source: Conway Data

Focusing on large employers in the Mainland / Southwest region that export to the US, there are a total of 93 manufacturing firms with 50 or more employees. Of this total, 52 firms have between 50 and 99 employees, and 41 have 100 or more.

According to this data, more than 13,000 jobs in the Mainland / Southwest region of BC are related to US exports. This includes nearly 2,000 jobs in fabricated metal products, 1,600 jobs in printing, 1,500 jobs in non-metallic mineral manufacturing, and 1,110 jobs in machinery manufacturing. Fabricated metal products accounts for the largest number of these firms (16 firms), of which 14 have between 50 and 99

employees. Non-metallic mineral products accounts for 12 firms, of which four have between 50 and 99 employees, and six have between 100 and 199 employees.

## US & CANADIAN LARGE INDUSTRIAL SITE DEMAND

To determine demand for large industrial sites, an examination of a subset of the New Plant Database developed and maintained by Conway Data was used. Conway Data produces *Site Selection* magazine, and has compiled a list of over 149,000 new plant and expansion records going back to 1989. This Conway Data database is compiled from company announcements, Conway Data's proprietary survey of development agencies, and electronic information sources, including the Internet. The Conway Data is screened to include only projects that cost at least US \$1 million dollars, cover at least 20,000 sq. ft. or employ at least 50 people.

The data shows that in 2008, there were more than 1,400 new or expanded plants announced in the United States and more than 250 in Canada. Manufacturing plants or facilities that combine manufacturing with other uses accounted for the largest share of these; manufacturing accounted for 720 plants in the US and 156 in Canada.

The majority of plant projects are new, as opposed to expansions of existing facilities. In the US new plants accounted for slightly less than two-thirds of all projects and in Canada they accounted for slightly more than two-thirds. For manufacturing and manufacturing combined with other uses, new plants accounted for 58% of US projects and 65% of Canadian ones.

**Table 25 – 2008 Plant Investments**

Category	United States			Canada		
	Expans.	New	Total	Expans.	New	Total
Call Center	4	16	20	3	6	9
Call Center - R & D	-	1	1	-	-	-
Sub-Total	4	17	21	3	6	9
Dist/Warehouse	61	140	201	2	20	22
Dist/Warehouse - HQ	5	17	22	1	-	1
Dist/Warehouse - Office	7	21	28	-	7	7
Dist/Warehouse - Office - R & D	1	-	1	-	-	-
Dist/Warehouse - R & D	-	1	1	-	-	-
Sub-Total	74	179	253	3	27	30
HQ	35	52	87	4	2	6
HQ - Call Center - R & D	-	1	1	-	-	-
HQ - R & D	6	8	14	1	1	2
Sub-Total	41	61	102	5	3	8
Manuf	316	404	720	57	99	156
Manuf - Dist/Warehouse	23	28	51	1	7	8
Manuf - Dist/Warehouse - HQ	3	5	8	-	-	-
Manuf - Dist/Warehouse - HQ - R & D	-	1	1	-	-	-
Manuf - Dist/Warehouse - Office	-	5	5	-	1	1
Manuf - Dist/Warehouse - Office - R & D	1	-	1	-	-	-
Manuf - Dist/Warehouse - R & D	1	1	2	1	-	1
Manuf - HQ	8	28	36	1	2	3

Category	United States			Canada		
	Expans.	New	Total	Expans.	New	Total
Manuf - HQ - R & D	-	3	3	-	-	-
Manuf - Office	9	17	26	1	5	6
Manuf - Office - R & D	3	3	6	-	1	1
Manuf - R & D	5	9	14	3	2	5
Sub-Total	369	504	873	64	117	181
Office	25	70	95	2	11	13
Office - Call Center -	2	6	8	2	-	2
Office - HQ -	1	2	3	-	-	-
Office - HQ - R & D -	-	1	1	-	-	-
Office - R & D -	2	5	7	1	2	3
Sub-Total	30	84	114	5	13	18
R & D -	12	33	45	1	9	10
Sub-Total	12	33	45	1	9	10
<b>Total</b>	<b>530</b>	<b>878</b>	<b>1,408</b>	<b>81</b>	<b>175</b>	<b>256</b>

Source: Conway Data

More than 1,050 of the announced plant projects in 2008 involved manufacturing facilities, including 873 in the United States and 181 in Canada. These were spread across a wide array of manufacturing sectors. The largest number of projects was in the chemical industry; of the 124 chemical plants announced, 103 were in the United States and 21 in Canada. Transportation equipment manufacturing plants also accounted for more than 100 projects in the one year time frame, including 62 in the US and 44 in Canada. Food manufacturing, fabricated metal products, and machinery each accounted for more than 90 of the projects.

**Table 26 - 2008 Investments in Manufacturing Plant**

NAICS	Description	US Projects	Canada Projects	Total
311	Food Manufacturing	75	20	95
312	Beverage and Tobacco Product Manufacturing	17	3	20
313	Textile Mills	10		10
314	Textile Product Mills	8	1	9
315	Apparel Manufacturing	3	1	4
316	Leather and Allied Product Manufacturing	3	1	4
321	Wood Product Manufacturing	23	10	33
322	Paper Manufacturing	24	7	31
323	Printing and Related Support Activities	16	3	19
324	Petroleum and Coal Products Manufacturing	8	9	17
325	Chemical Manufacturing	103	21	124
326	Plastics and Rubber Products Manufacturing	52	5	57
327	Nonmetallic Mineral Product Manufacturing	24	10	34
331	Primary Metal Manufacturing	47	5	52
332	Fabricated Metal Product Manufacturing	92	4	96
333	Machinery Manufacturing	87	7	94
334	Computer and Electronic Product Manufacturing	46	6	52
335	Electrical Equipment, Appliance, and Component Manufacturing	25	5	30
336	Transportation Equipment Manufacturing	100	13	113

NAICS	Description	US Projects	Canada Projects	Total
337	Furniture and Related Products	13	2	15
339	Miscellaneous Manufacturing	28	1	29
	Other	62	44	106
	Unknown	7	3	10
	<b>Total</b>	<b>873</b>	<b>181</b>	<b>1,054</b>

Source: Conway Data

In our analysis Conway Data was further queried to demonstrate projects in the US and Canada that met at least one of the following criteria (1) 100 or more employees, (2) 200,000 or more square feet, (3) capital investment of \$20 million or more. Criterion was selected as it represents the sort of investments foreseen to occur on 100 acre tracts at the project site. Table 27 shows that of 221 projects meeting the criteria, 81% of the projects were in the manufacturing sector.

**Table 27 - 2008 Investments in Manufacturing Plant**

Category	United States			Canada		
	Expans.	New	Total	Expans.	New	Total
Call Center -	3	11	14	2	3	5
<i>Sub-Total</i>	3	11	14	2	3	5
Dist/Warehouse -	17	70	87	1	4	5
Dist/Warehouse - HQ-	4	6	10	-	-	15
Dist/Warehouse - Office -	2	4	6	-	1	1
Dist/Warehouse - R & D-	-	1	1	-	-	-
<i>Sub-Total</i>	23	81	104	1	5	21
HQ-	19	18	37	4	1	1
HQ- R & D-	1	3	4	-	-	-
<i>Sub-Total</i>	20	21	41	4	1	1
Manufacturing -	113	199	312	29	56	85
Manufacturing - Dist/Warehouse -	11	9	20	-	5	86
Manufacturing - Dist/Warehouse - HQ-	2	2	4	-	-	-
Manufacturing - HQ-	3	10	13	1	-	1
Manufacturing - Office -	1	6	7	-	2	1
Manufacturing - Office - R & D-	3	1	4	-	1	1
Manufacturing - R & D-	2	2	4	2	2	4
<i>Sub-Total</i>	135	229	364	32	66	178
Office -	16	32	48	-	8	5
Office - Call Center -	1	2	3	2	-	2
Office - HQ-	-	2	2	-	-	-
Office - R & D-	1	2	3	1	1	2
<i>Sub-Total</i>	18	38	56	3	9	9
R & D-	7	13	20	-	7	7
<i>Sub-Total</i>	7	13	20	-	7	7
<b>Total</b>	<b>206</b>	<b>393</b>	<b>599</b>	<b>42</b>	<b>91</b>	<b>221</b>

Source: Conway Data

# Growth Industries and Industrial Clusters

## **GREEN POWER/GREEN BUILDINGS -**

Green Power Increasing concern over rising cost of oil is driving growth in alternative energy development. Major initiatives are underway in response to a potential increase in use of renewable energy. A "cluster" of industries that could support the green power movement include:

1. manufacture towers, wire, and electrical components to support new and rebuilt transmission lines,
2. manufacture of improved batteries for electric grid related energy storage to address peak use,
3. manufacture of wind, solar, and wave power generating equipment,

Green Buildings A second aspect of the green movement is an increase in building techniques which reduce the amount of energy required to construct, operate and maintain buildings. A cluster of industries serving the green building movement may be particularly appropriate as this would build on current skills of the Lewis County labor force in forest products industry and build on strong base of wood building products manufacture that exists in the state. Some green building products such as composite wood manufacture make more efficient use of materials such as Douglas Fir that take many years to grow, thereby reducing land area and impacts associated with production of woodfiber. Other building products utilize "rapidly renewable" materials such as wheat and corn waste, bamboo and poplar that are increasingly used as building materials as the green movement grows. Other aspects of the green building movement include conservation of electricity, and increased emphasis on use of recycled materials. Some of the emerging manufacturing needs related to Green Buildings are:

1. Composite wood products
2. Rapidly renewable building materials (paper and boards from poplar, bamboo, straw and wheat),
3. Recycling of metal, building materials, and electronic equipment,
4. Energy saving glass, especially in window and door assemblies,
5. Reuse of waste products from traditional power generation in building materials such as concrete, asphalt and rubber (See eco-industrial parks below.),
6. Energy saving lighting (led and high efficiency fluorescent),
7. Manufacture of cooling equipment with low impact refrigerants such as CO2

## **ECO-INDUSTRIAL PARKS**

Other industries suited for the project site are those with synergistic and symbiotic relationships with the TransAlta Centralia Operations as well as with other industrial tenants. Industries sited at the project site should be able to co-operate with each other and local communities to efficiently share resources (information, materials, water, energy, and infrastructure).

Conditions and existing operations adjacent to the site are favorable for development of an Eco-Industrial Park. The concepts and approaches of an eco-industrial park, as defined by the National Center for Eco-Industrial Development are as follows:

- Pollution prevention/Waste minimization
- By-product exchange
- Green design
- Life cycle analysis
- Technological innovation
- Optimizing resource use
- Fostering networks among businesses

The 2007 TransAlta Report on Sustainability indicates that TransAlta is currently minimizing some waste from the coal fire combustion process. Synthetic gypsum by product from the Centralia operations is being used in wallboard, replacing natural gypsum and the need to mine for it. TransAlta has indicated that currently a wallboard plant close to the power plant uses 100 percent of the FGD (flue gas desulfurization) gypsum being produced by TransAlta.

TransAlta currently generates the following amount of byproducts that area available for use by others sited at the industrial park

**Table 28 - Coal Combustion By-Products Possibly Available for Recycling <sup>5</sup>**

<b>Material Available for Recycling *</b>	<b>Quantity (Annual Production at TransAlta Centralia Operations)</b>
FGD Gypsum	100,000 tons
Fly Ash	300,000 tons
Bottom Ash	100,000 tons
Float Ash (cenospheres)	1,000 tons

\* Large quantities of CO2 and Heat produced from coal combustion process would be available for use by tenants at the project site.

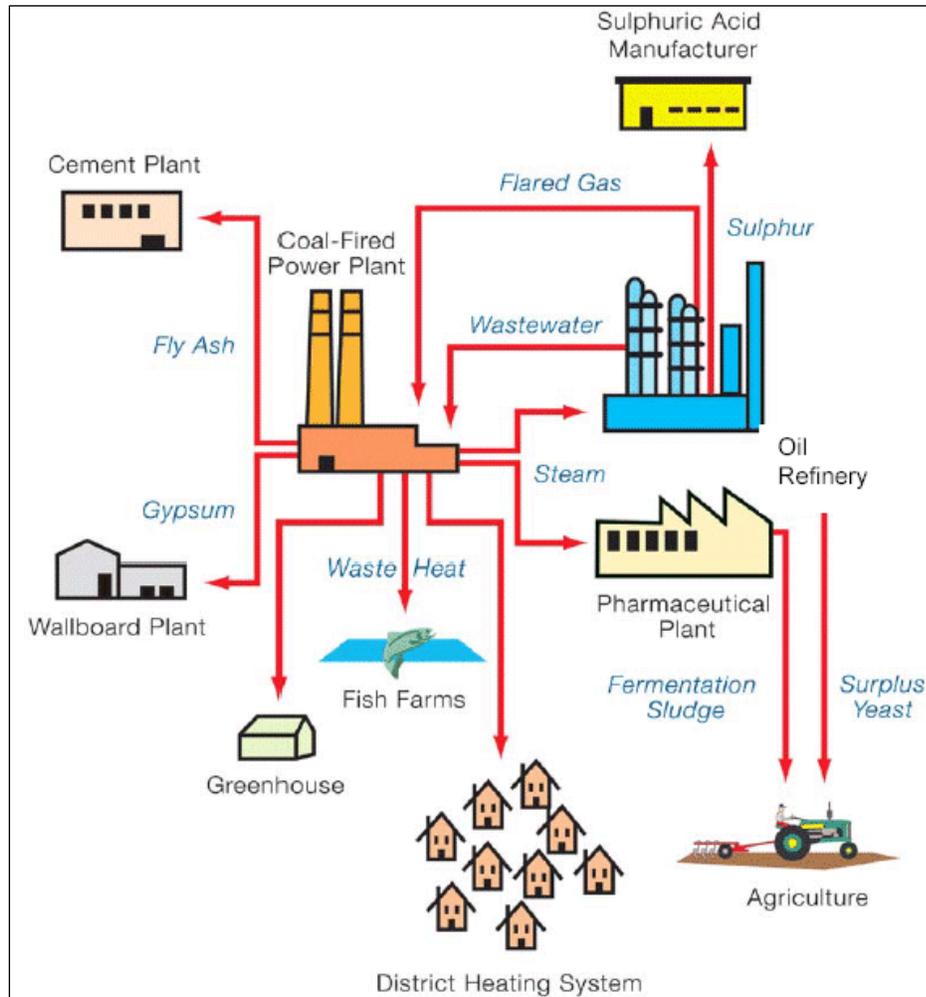
The industrial symbiosis of an eco-industrial park takes advantage of the geographic proximity of businesses to engage traditionally separate industries in the exchange and utilization of by-products, waste water and energy, and sharing of utility infrastructure.

Below, Figure 10 illustrates how by products from a typical coal fired power plan might be used in an eco-industrial park.

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<sup>5</sup> Information provided by TransAlta Centralia Operations. July 2009

**Figure 10 – Industrial Symbiosis Kalundborg, Denmark**



Successful growth industries for the site would be those that can use or process waste materials from the TransAlta facility for their operations. The National Center for Eco-Industrial Development has indicated that the environmental benefits of an eco industrial development are:

- Reduced greenhouse emissions
- Reduced air emissions and improved community health
- Promotion of pollution prevention and the 4 R's (reduce, reuse, recycle, and recover)
- Improved resource conservation
- Promotion of green technology
- Increased environmental awareness
- Regeneration of green space

Potential eco-industrial park would include any or all of the following features:

- a single byproduct exchange pattern or network of exchanges;

- a recycling business cluster (e.g. resource recovery, recycling companies);
- a collection of environmental technology companies;
- a collection of companies making “green products;”
- an industrial park designed around a single environmental theme (i.e. solar energy driven park);
- a park with environmentally friendly infrastructure or construction; and

The most critical element of an eco-industrial park is the interactions of the industries among its businesses and between them and their natural environment. It may be feasible for a cluster of industries that could use the waste by products produced at the TransAlta facilities to cluster on one lot. A central storage facility could be designed that would maintain waste products from TransAlta until used in manufacturing processes. Wastewater from developments at the TransAlta Park could be treated so that they are suitable to use for irrigation purposes at a nursery on the site.

***Using Quantities of Coal Combustion By-Products, US Department of Energy***

The US Department of Energy has been working to develop a demonstration plant that will use the by-products from burning coal as inputs to produce a number of usable outputs. The estimated types of output products and their share of total output are presented in the following table:

**Table 29 - Coal Combustion Output Products**

<b>Product</b>	<b>%</b>
Cementitious Pozzolan	79.0%
Lightweight Aggregate	8.1%
Graded Construction Fill-Sand	8.1%
Recycled Carbon Fuel	4.1%
Polymeric Filler	0.8%
<b>TOTAL</b>	<b>100.0%</b>

Cementitious Pozzolan can be used at higher portland cement substitution levels in concrete (i.e. 30% versus the current 20%), while producing better strength and performance than what is available from unprocessed ash. Lightweight aggregate is suitable for use in concrete masonry units. Graded construction fill-sand is a direct substitute for quarry product. Recycled carbon fuel will be reused at the site. Polymeric filler can be used as a specialized pozzolan or in the manufacture of plastics.

Another potential use for coal-plant byproduct is drywall used in construction. Synthetic, or flue-gas, gypsum is a waste product obtained from stack scrubbers that remove sulfur from coal-fired power plant emissions. (In these scrubbers, calcium carbonate is converted to calcium sulfate, or gypsum.) According to buildinggreen.com, synthetic gypsum may replace up to 100% of the natural gypsum in drywall. Recent events, however, may dampen prospects for this type of product. Drywall made from flue-gas gypsum and imported from China in recent years has been found to off-gas noxious fumes. This material was used in the construction of thousands of homes, and solving the issue is likely to be very expensive.

Although there are no reports of similar problems associated with American-made drywall, this may create a marketing challenge.

### ***Case Study: Use of Fly Ash in Concrete Dairyland Power Cooperative***

Dairyland Power Cooperative (DPC), located in La Crosse, Wisconsin, is a generation and transmission cooperative providing wholesale electrical requirements and other services for 25 electrical distribution cooperatives and 19 municipal utilities in the Midwest; in 2008 Dairyland was responsible for generating 978 Megawatts of electricity.

In 2008 DPC reported using 98% of the fly ash generated at one of their facilities and 89% at another power plant facility for industrial purposes. The DPC indicated that for, “each ton of coal burned by power plants to produce electricity, approximately 5 percent, or 100 pounds, results in an ash byproduct. Of this ash byproduct, approximately 80 percent is referred to as fly ash, a light powdery substance captured in the emission control systems at the power plant. The remaining 20 percent is bottom ash, a coarse granular material collected at the bottom of the coal furnace. Both fly and bottom ash consist of chemical compounds that are commonly found in natural clays and limestone, and are the major components of Portland cement.”

Fly ash is used extensively in concrete, from lightweight applications to ultra strong, load-bearing columns in high-rise buildings. In addition to general concrete use, Dairyland also markets their fly ash to pipe manufacturers for use in underground piping. Dairyland reported that it is cheaper to manufacture cement using fly ash than virgin ingredients since it has already been heated in the combustion process. Cement manufacturing is very fuel-intensive, requiring the inputs to be heated to thousands of degrees, and using the fly ash can reduce the amount of fuel needed. Using fly ash in cement production also reduces greenhouse gas emissions, since the amount of fuel used for heating is substantially lower. Also, fly ash affects the plastic properties of concrete by improving workability, reducing water demand, reducing segregation and bleeding, and lowering heat of hydration.

## **POTENTIAL TENANTS**

Potential tenants identified in this section include large regional, national and international firms in the emerging and established manufacturing sectors in Washington.

Established sectors include transportation equipment, lumber and wood products, printing and publishing, rubber and plastics, stone, clay, glass and concrete products, fabricated metal products, industrial and commercial machinery, computer equipment and instruments. Emerging sectors identified include Green Buildings, Green Power and Eco-Industrial parks. Washington has strong import and export relationships which provide access to international world markets in some of these areas.

### ***IMPORT/EXPORT CHARACTERISTICS***

The State’s economy is primed for development of large capital intensive industries. Washington’s Global Ties (*from Global Trade Alliance, November 2008*) reported that:

- Washington exports three times as much as the average State
- More than \$80 billion worth of goods travel through the ports of Puget Sound each year.
- 85% of Washington companies exporting are small to medium sized businesses.

- Washington's largest trading partners are China \$26.7 billion, Canada \$23.4 billion, Japan \$15.9 billion, India \$5.9 billion, South Korea \$5.6 billion and Taiwan \$4.6 billion.

## Established Manufacturing Sectors

Potential tenants at an industrial park at the project site who need land for expansion in a central location were identified as potential tenants. Those with a current strong employment base in Washington State are ideal:

- Plastics and Rubber Products
- Fabricated Metal Product Manufacturing and Welding Facilities
- Machinery and Parts
- Computer and Electronic Products
- Transportation Equipment Manufacturing
- Electrical Equipment, Appliance, and Component Recycling Center and Manufacturing
- Wood Product Manufacturing

Potential tenants identified above were selected for a number of reasons, including their capacity to take advantage of Lewis County's underemployed skilled labor force, their compatibility with the available infrastructure at the site, and their overall ability to perform in the economy of the Northwest.

## Green Building/Green Power Movement

- Assemblage Plants of Finished "Green" Products
  - Manufacturing Materials to Update Electrical Distribution Equipment
  - Batteries
  - Wind Turbine Generators
  - Manufacturing of Hybrid Vehicle Components
  - Components of Solar Panels
    - A mutually beneficial situation would be a manufacturing/assemblage industry that could work with an established company like Cardinal Glass (of Lewis County) to manufacture and assemble components necessary to create a finished product using the components of the established company's manufactured product. The new company could manufacture components for solar panels, purchase the glass wares from Cardinal, and assemble at the site.
      - CTED, in *Washington State's Green Economy*, January 2009, indicated that solar photovoltaic manufacturing is projected to provide up to 14,182 new jobs in the Pacific Northwest by 2025
      - Deposits of silica sand have been identified on Area 3.

## Eco Park Tenants

Attracting potential tenants to the park that can create a synergistic relationship with the TransAlta Centralia Operations would be an ideal scenario and should be a marketing priority. Some of the following industries have been identified for being able to characterize this synergy. Some users would have low capital costs and may only be interim uses that would be replaced by more intensive manufacturing uses over time.

**Green House or Nursery** (this may be especially appropriate on Area 2 due to the topography of the site).

- A commercial green house or nursery could use CO2 emissions produced by TransAlta.
- It may also be possible to use green house operations as a method of cooling waters from the TransAlta Centralia Operations by employing an irrigation system that both waters plants at the facility and cools pre-treated industrial waters before discharge.
- Plants grown on the site, such as bamboo, could be used to manufacture consumable goods on-site, such as textiles or wood products.
- Waste from harvesting and processing plants could be used as biomass.

### **Coal Combustion By Products Re-Use**

One option for reuse of byproducts from Coal Fired Power Plant would be the creation of a "products center" that could support several industries on site. Examples of industries that might locate and use these products are noted below.

- Concrete, Concrete Products, and Grout;
  - These are products that can be produced by using fly ash, bottom ash, and boiler slag which are waste products generated from the coal combustion process.
  - The materials manufactured could be used for the roads, building slabs, sidewalks, and other necessary infrastructure and building components of an Industrial Park at the project site.
- Shingles Manufacturing;
  - Currently bottom ash and boiler slag used for shingle manufacturing are transported off-site to manufacture.
  - By establishing a facility on-site, there is no cost for the transportation of raw materials.
  - Materials can be used on site.
- Drywall manufacturing;
  - Drywall can be manufactured using FGD (flue gas desulfurization) material created as a by product of coal combustion.

# COMPETING PROPERTIES

While there are 100 acre tracts available for industrial development in the Pacific Northwest, no industrial parks accommodating capital intensive industries requiring a minimum of 100 acres have been identified in Western Washington. It is likely that some of the existing 100 acre industrial tracts that have been identified are intended to be segregated into smaller tracts, as there are no regulations in place requiring a minimum 100 acre site. Table 2 in Chapter 1-1 of this report provides some information on specific properties that an industrial park at the project site will be competing against.

## ***Midwest and Southern States Competitors***

Local economic development councils are scattered throughout the Midwest and Southern United States. These areas offer inexpensive land relative to the west coast, often have less state environmental policies or regulations, and a state tax and financing framework that helps subsidize industrial development. These areas can be viewed as competitors for some uses, but they do not have easy access to the Vancouver BC, Seattle, and Portland markets. Nor do these sites have easy access to ports serving the Pacific Rim.

The project site offers a long term competitive advantage over Midwest and southern sites when considering the quality of life in Lewis County and the State. Over time the current higher growth rate of coastal states is expected to continue, this provides the project site with a long term location advantage over some other potential sites.

## ***Pacific Northwest Competitors***

Oregon has been identified as having competing properties, and as being proactive in ensuring shovel ready 100-acre industrial tracts are available for potential industries. The Oregon Economic and Community Development Department (OECDD) is giving support to large industrial sites, especially those of 100 to 200 net contiguous acres, providing they meet the following criteria:

- Local ordinances restrict ability of landowners to subdivide these large sites into parcels of less than 100 acres.
- The sites are contiguous to an existing Urban Growth Boundary and have ready access to local utilities such as sewer, water, and energy.
- Transportation access is not constrained.
- Site owners and the city agree to meet the requirement for certification under Oregon's Certified Industrial Site program.

If a site in Oregon does not currently meet these conditions, the OECDD can give their support to a project if a plan is in place to address pertinent issues. Large ready-to-go industrial sites have been identified as being one of Oregon's most significant development challenges and one of the most noticeable changes in real estate trends in the last few years. In order to meet the demand for large ready to go sites, in 2003 the State instituted its Certified Industrial Site program. The OECDD has recognized the need for large 100 acre sites and is actively pursuing sites for the Certified Industrial Site program.

A restriction of the competitiveness of the sites in Oregon is that many of the large tract sites are located in

eastern Oregon in areas of sparse population and employment pools. Mountains form a barrier to travel from the states to Northern California, Washington, and Vancouver, BC. Large tract sites on the west side of the mountains are in short supply.

### ***International Competitors***

Currently many products used in the US are manufactured in other countries; indicating that competition from other countries is an important factor in considering which industries will locate at the project site. In general, labor intensive products that are relatively easy to ship tend to be manufactured overseas. Items with high value added per unit of labor are more likely to be manufactured within the US. As transportation costs rise, manufacturing within the US for the US market becomes more competitive.

## **ADMINISTRATION OF AN INDUSTRIAL PARK**

Having established that an industrial park is a valuable facility, designed a conceptual plan, and explored possible industries that could potentially benefit from locating in an industrial park at the project site, a discussion on administration is appropriate.

### **Industrial Park Administration and Marketing**

This section includes a discussion of the best structure for ownership, marketing, development, management, and operation of the industrial park. The discussion is based, in part, on a meeting held on December 10, 2008 between representatives of the LCEDC, and a cross section of consultants and stakeholders. In addition, the conclusions represented in this discussion are based upon meetings and conversations with capital intensive industries, community stakeholders, and industrial brokers.

### **Management Structure**

An entity is required to manage development and operations of the Industrial Park to meet economic development goals of creation of high wage jobs and a strong tax base benefiting the people of Lewis County.

Legally, the Lewis County Economic Development Council could develop and operate the Industrial Park. However, this could create an actual or perceived conflict of interest. Situations could arise and the LCEDC might be challenged that they were putting a disproportionate effort into marketing for the site over other industrial property in Lewis County. Generally, the site does not compete with other Lewis County properties and could possibly serve as an impetus to boost other development in the Lewis County region.

Studies have shown that there are no other 100 acre plus industrial parks for capital intensive industries in the County, and few available elsewhere in the region. An alternative management structure to the LCEDC will help assure that the LCEDC maintains its public perception as having a County wide focus for marketing of industrial property and help avoid challenges that the LCEDC is giving preferential treatment to the project site.

And while the management structure will be separate from the LCEDC, it would be beneficial for the new management structure to begin fostering a relationship with the LCEDC and building upon their strengths.

## **EVALUATION CRITERIA**

The following were identified as key criteria in selecting a new organizational structure:

**Community oversight** – The project involves expenditure of funds from public agencies. Broad community oversight is important to assure that the goals for which these funds were provided (creation of high wage employment opportunities for Lewis County residents) are maintained for the life of the project. The management entity must be accountable to the people of Lewis County and the State.

**Use of public funding alternatives** - The management organization should be able to access public funding to pay for infrastructure through alternatives such as bonds, taxes, local improvement district, grants and loans from federal and state agencies. Tax incentive alternatives from state and local government may be used to attract desirable industrial tenants with high wage jobs.

**Ability to hold revenue** - The management organization should be able to receive revenues (from property purchase, grants and loans, etc.)

**Flexible use of funds;** - The organizational structure should be able to use funds for purposes consistent with the goals of the LCEDC to create high wage jobs for Lewis County residents. This could include funding infrastructure development to the site or training for employees expected to work in the County.

**Ease of establishing and forming the management structure** - The organizational structure should be simple to set up and administer.

**LCEDC interconnect** - it is important that the LCEDC's goal to create high wage labor jobs on the TransAlta site is carried out by the organization owning and managing operations at the site.

**Conflict of interest with LCEDC goals and mission** - the organization should, in general, not have goals that conflict with LCEDC's goals of creating high wage labor jobs on 100+ acre sites.

## **MANAGEMENT STRUCTURES**

Alternative management structures identified include: Public Development Authority, Not-for-Profit (separate from LCEDC), and Private-for-Profit.

**Public Development Authorities**, commonly referred to as PDA's, are an entity created by a government, established under RCW 35.21.730, to undertake commercial or business activities on behalf of the government. PDA's are independent entities separate from City or County government, allowing them to accomplish public purpose activities without assuming them into regular functions of City Government. PDA's are governed by a volunteer council, commonly called a governing board, which sets policies and oversees activities and staff. Thus, the success or failure of a PDA is dependent on its council's abilities. PDA's allow direct community participation in their projects, and can combine public taxes and private donations. They have flexibility under State law to administer federal funds and may qualify for tax-exempt borrowing rates.

**Not-for-Profits** are legally constituted organization whose objectives are to support or engage in activities of public or private interest without external commercial or monetary profit. While they are able to earn a profit, more accurately called a surplus; such earnings are retained by the organization for its future provision of programs and services, and are not owned by nor distributed to individuals or stakeholders. The stepping stone of a not for profit organization is determining the purpose of establishing an organization and drafting the charter or declaration of trust.

Many non-profits are operated by volunteers, paid staff or a combination of both, usually reserving the senior executive positions to paid personnel while the entry-level and field positions are frequently held by volunteers. Additionally, an NPO may have members or participants or beneficiaries or students etc. as opposed to customers in for-profit organizations. They require a board of directors, governance in accord with by-laws or an organizing document, such as a charter or declaration of trust.

**Private for Profits** are corporations existing under the premise of earning and distributing taxable business earnings to shareholders. Private for profit corporations exist as a product of corporate law and their rules balance the interests of the shareholders that invest their capital and the employees who contribute their labor. People work together in corporations to produce value and generate income.

**EVALUATION AGAINST CRITERIA**

The three management organizations were reviewed against the criteria and given a score of one through three in Table 30 (below); with a score of one being the most positive result and a score of three being the most negative result. Thus, a lower score indicates the most appropriate local organization to operate the functions at the site in relation to the criteria.

**Table 30 -Management Structure Evaluation Matrix**

	<b>Public Development Authority (PDA)</b>	<b>Not-for-Profit (separate from LCEDC)</b>	<b>Private for Profit (corporation)</b>
Public oversight	2	2	3
Use of public funding alternatives	1	2	3
Ability to hold revenue	1	1	1
Flexible use of funds	3	2	1
Ease of establishing and forming the organization	3	2	1
LCEDC Interconnect	2	1	3
Potential conflict with LCEDC goals and mission	1	1	3
<b>TOTAL</b>	<b>13</b>	<b>11</b>	<b>15</b>

**Score Key: 1 = Best; 2 = Good; 3 = Worst**

***Recommendation***

There are advantages and disadvantages to each of the three management structures, from the results of comparing the three structures against the evaluation criteria, the Not-for-Profit (separate from the LCEDC) score shows it to be the best for the task of ownership, administering, and marketing of operations at an industrial park development at the project site.

# Chapter 1-4: Conclusions

## RECOMMENDED TARGETED INDUSTRIES

Capital intensive industries with potential for success were identified in the areas of:

- Established manufacturing sectors currently located in the Washington, Oregon, and British Columbia that are experiencing growth;
- Emerging manufacturing trends in Green Power/Green Building; and
- Eco Industrial Park starting with by products of Coal fired power generation.

The industries identified as the largest manufacturing employers with potential for locating at the project site were reviewed for potential clusters.

One cluster of large industries could be formed by transportation equipment, industrial and commercial machinery, fabricated metal products, primary metal industries. Rubber and plastics could fit in this group depending of the type of transportation equipment and machinery being manufactured. This cluster might be primarily focused on serving truck, aircraft, railroad, and possibly marine equipment and machinery. The cluster could support Green Building/Green power and Eco-Industrial park concepts by including products such as wind, solar, and wave power generating equipment.

A second cluster of large industries could be formed around building products including lumber and wood products, stone glass, clay, and concrete products. Equipment could include energy efficient lighting and heating ventilating and air conditioning equipment. Paper wood, metal, and agricultural products could be utilized to produce building products such as drywall, composite board, wheat and straw board, window and door assemblies and insulation.

The eco-industrial park concept could be used as a base for marketing efforts that could shape an industrial park with a competitive advantage in several areas. Further technical analysis of feasibility is needed, however the following suggestions are offered as a starting point.

Several byproducts from the TransAlta plant could be used in product manufacture noted above including waste heat, ash, and CO<sub>2</sub>. Refinement of target tenants and industries should be an on-going part of the marketing process whereby information gained from industry contacts is used to modify and enhance park design and management strategies to improve competitiveness of the park in world markets.

Industries discussed below have been identified for being able to benefit from the project site and its location near TransAlta Centralia Operations:

### **Growth Industries Already Established in Washington State**

- Plastics and Rubber Products
- Fabricated Metal Product Manufacturing and Welding Facilities
- Machinery and Parts

- Computer and Electronic Products
- Transportation Equipment Manufacturing
- Electrical Equipment, Appliance, and Component Recycling Center and Manufacturing
- Wood Product Manufacturing

## **Eco Park Tenants**

The following industries are identified as being particularly appropriate in terms of using TransAlta Centralia Operations by-products:

- Green House or Nursery
- Products Using Coal Combustion By Products
  - Concrete, Concrete Products, and Grout;
  - Shingles Manufacturing;
  - Drywall manufacturing;

## **Emerging Trends: Green Building/Green Power Movement**

Potential tenants identified in this sector were selected for a number of reasons, including their capacity to take advantage of Lewis County’s underemployed skilled labor force, their compatibility with the available infrastructure at the site, and their overall ability to perform in the economy of the Northwest.

- Assembly Plants for Finished “Green” Products
  - Solar Panels
  - Batteries
  - Wind Turbine Generators
  - Hybrid Vehicle Components
  - Support National Grid Update

## **MARKETING STRATEGY**

The Industrial Park at TransAlta (IPAT) is the management structure charged with fostering relationships and marketing the project site to potential industrial developers. A holistic approach to marketing will be required to develop a forward thinking plan; the plan should be continually updated based on information from industry contacts. Retaining and accommodating industries in Washington State is a priority, but the Industrial Park should be marketed both nationally and internationally. Attracting potential tenants to the park that can create a synergistic relationship with the TransAlta Centralia Operations would be an ideal scenario and should also be a marketing priority. Actions thought to improve the marketability of the site are as indicated below:

- Be able to provide potential tenants with a clear status of infrastructure development efforts on and off site along with information on the infrastructure that is already in place
- Show tenants improvements that have been constructed and those that are designed and permits approved. Information on infrastructure financing mechanisms and funds to develop the improvements should be identified.
- The more of the permitting process that is completed, the more marketable the property will be. Establish contacts with permitting agencies, develop solid working relationships, and be aware of the actions needed to efficiently process permits.
- Provide geotechnical information to potential tenants.
- Maintain documentation of community support - such as records of land use approvals, newspaper articles, and public meeting minutes.
- A formal entrance to the industrial park is a suggested mechanism for marketing the site. An entrance to the park can be as minimal as a sign indicating the name of the industrial park or can include a formal entry indicating a sense of place, arrival, and identity.

## Location Analysis

The project site is located near Centralia, in western Washington. The Cascade Mountains run from north to south through the center of Washington, effectively dividing the state into two distinct regions. Oregon borders Washington approximately 90 miles to the south of the site, and has a similar east-west split created by the Cascades. Since the project site is in the western half of the state, the properties most competitive are located in western Washington and western Oregon.

The industrial park can meet future regional demand for larger sites to serve capital intensive industries' needs, infrastructure intensive technology industries, and other 100 acre plus industrial activities. The site location is differentiated from others in that it is central to both the Seattle/Tacoma and Portland/Vancouver markets. The project site also offers multiple development areas to potential industries with access to I-5.

## Washington State Tax Incentives

New (and existing) manufacturers, research and development firms, and certain high technology companies can benefit from several tax incentives offered by the State of Washington. The incentives are intended to encourage the creation and preservation of family wage jobs, especially in areas with high unemployment. Some of the major tax incentive programs offered by the State of Washington are listed below:

### **B&O (Business and Occupation Tax) Rate Reductions**

- Manufacturing commercial airplanes and components
- Manufacturing commercial airplane tooling
- Manufacturing biofuel
- Manufacturing of solar energy systems and components

- Manufacturing timber/wood products
- Manufacturing semiconductor materials

#### **B&O Credits**

- New employees in rural counties
- High tech expenditures
- Software development (rural counties)
- Aerospace Product Development
- Property/LH Tax Paid Commercial Airplane Manufacturing Facilities
- Rural Economic Development (PUT Credit)
- Property Tax Paid on Aluminum Smelting Equipment
- Consumer Generated Power (PUT Credit)
- B&O Tax Credit for the Sale of Forest Derived Biomass Used to Produce Electricity, Steam, Heat or Biofuel
- Energy Efficient Commercial Appliances

#### **B&O/PUT Exemptions/Deductions**

- Sales of Biodiesel Fuel, Etc.
- Sales of Power Used for Electrolytic Processing
- Sales of Power Used for Smelting Aluminum

#### **Sales/Use Tax Exemptions, Deferrals**

- Rural County Deferral for Manufacturing & R&D
- High Technology Deferral
- Renewable Energy Production Equipment Exemption
- Equipment to Sell Biodiesel Fuel, Etc.
- Computer Costs - Aerospace Products
- Aircraft Construction Facilities for 787

#### **Sales/Use Tax Exemption for Semiconductor Gases**

- BioTech Manufacturers Deferral
- Corporate HQ Deferral
- Solar Hot Water Equipment
- RST Exemption for Anaerobic Digestors
- Waste Vegetable Oil RST & Special Fuels Exemption
- RST Exemption/Remittance for Renewable Energy Production Equipment
- RST Exemption for Forest Derived Biomass Used to Produce Electricity, Steam, Heat or Biofuel

#### **Other Tax Incentives**

- Property Tax Exemption for Biodiesel Fuel Manufacturers
- Property & Leasehold - Aircraft Facilities

## **Industrial Park Administration and Marketing**

Legally, the Lewis County Economic Development Council could develop and operate an Industrial Park at the project site. However, to avoid conflicts of interest, a separate not for profit organization, is recommended to accomplish the task of ownership, administering, and marketing of operations at the industrial development site. Possible administration organizations were examined against criteria. It was concluded that a not-for-profit would be the most appropriate body to administer and market the site to potential tenants.

Prior to the publishing of this feasibility report, the recommendation to form a not for profit to administer and market the project site was presented to the LCEDC Board of Directors, and since then a separate entity, Industrial Park at TransAlta (IPAT) was formed as a 501(c)(3) to carry out these responsibilities.

## **Site's Potential to Support Anticipated Future Development**

The site's potential to support future development is largely dependent upon the administration's ability to secure Federal, State, County, City and private funding for the development of infrastructure needed to serve the site. The Cost and Benefits analysis of this feasibility study indicates some of the improvements required to facilitate development at the project site.

## **Public Facilities**

Improvements to roads, water, and sewer systems on-site, and in some cases off-site, will have to be constructed for industrial development to be feasible. Recommended improvements are in the Costs and Benefits Analysis Chapter of this report. Limited resources, controlled by TransAlta Centralia Operations are currently available, mutual agreements for sewer and water made between TransAlta and a potential tenant industry may make it feasible for one to three 100 to 140 acre sites to be developed without significant investments in infrastructure being made.

## **Project Success**

Success of an industrial park at the project site can be measured by several variables:

- the number of living wage jobs created and sustained over the years;
- expansion of the tax base in Lewis County and the increase in revenue collected by County and City governments associated with the capital intensive operations at the site;
- the amount of open space and natural habitat that will be reclaimed from the former mining conditions and preserved at the site of the surface coal mines.
- Spin off benefits in the form of businesses and services that support primary businesses and employees at the site.
- Opportunity for the local youth, through skills training, to find living wage jobs in Lewis County.

# PHASE II: TECHNICAL FEASIBILITY ANALYSIS

# CHAPTER 2-1: ENVIRONMENTAL REVIEW

This chapter is intended is to be used for preparing an environmental document supporting adoption of changes to the Lewis County Code and Comprehensive Plan sections and to designate the project site as a master planned location for major industrial activity through a Comprehensive Plan Amendment.

Chapter 2-1 provides review of existing conditions, impacts, and potential mitigating measures associated with a change in future land use at the site. The proposal would allow, on a minimum 1,000 acres of an approximate 4,500 acre portion of mine lands reclaimed to upland forest and pasture conditions, for large tract (minimum 100 acre) industrial use. Under the proposal approximately 3,300<sup>6</sup> acres of the 4,500 acre industrial park area at the project site would be retained as upland forest and pasture conditions.

- *Existing Conditions* are primarily as defined by the mine reclamation requirements as defined in TransAlta - Centralia Federal Mine Permit No. WA-001E,
- *Impacts* are determined by comparing conditions related to future use of the site as an industrial park against existing conditions
- *Potential Mitigating Measures* are identified in cases where the change in future land use might have an adverse impact.
- *Off Site Infrastructure Improvements Options* are identified to serve the site with rail, water, roads and sewer. Some of these options could require ground disturbing activities outside the project boundary. This report generally does not include discussion of existing conditions, impacts and potential mitigating measures associated with construction of infrastructure improvements off-site.
- *Induced Land Use Effects* are generally not discussed in this environmental report. Such effects could include increased growth or more rapid growth in nearby Urban Growth areas due to higher employment opportunities.

Chapter 2-1 may be used as part of the documentation supporting the adoption of changes to the Comprehensive Plan and the Lewis County Code (LCC) in accordance with provisions of Senate Bill 6014 (2007/08) as codified in RCW 36.70A.368 for designating a master planned location where industrial activity may take place.

## Proposal Description

The proposal involves the designation of approximately 4,500 acres of reclaimed coal mine lands as a master planned location for major industrial activity, resulting in a change of land use at the project site to industrial use. Per RCW 36.70A.368, no site in the proposed industrial park may be less than 100 acres. Seven *Development Areas* are identified as potential sites for future industrial users. Infrastructure improvements are proposed on-site and off-site to serve anticipated user needs.

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<sup>6</sup> 200 acres are assumed to be needed for infrastructure development outside of the 1,000 developable acres.

## **Purpose and Need of Proposal**

Lewis County averages wages are declining in relation to State averages; actions are needed to help reverse this trend in Lewis County. The proposal to create a master planned location for major industrial activity in Lewis County has several purposes and goals.

- *Provide a location where industries that require 100+ acre sites can establish their facilities.*
- *Create living wage jobs for the people of Lewis County.*
- *Avoid, minimize and mitigate impacts to the natural environment, surrounding land uses, and local communities.*
- *Respond to state and local recognition of the need for industrial capacity for large capital intensive industries in Lewis County.*
- *Provide the ability to serve industries that require rail service.*
- *Provide sites for large tract capital intensive industrial users in a location in Lewis County that has minimal environmental constraints*

### **Scope and Timing of Potential Development Phases**

The project site will be developed in three phases. The phases within the approximate 4,500 acre industrial park are arranged geographically in a manner that will facilitate an orderly development of infrastructure and industrial facilities.

The three phases correspond with the existing reclamation schedule. Phase 1 includes Areas 1, 2, and 3. Phase 2 includes Area 4. Phase 3 includes Areas 5, 6, and 7. The assumption is that of the approximately 4,500 acre site, approximately 1,000 acres are available for the development of industrial facilities. An additional approximately 200 acres will be required for on-site infrastructure corridors. The total acreage of the project site includes a lake, ponds, wetlands and buffers, steep slopes, steep slope buffers, and a disposal area. Preserving these constrained areas where they occur within development sites leaves an estimated 1,000 acres for the development of capital intensive industries. Development will be focused on the approximate 1,000 acres which are least impacted by constraint characteristics.

At this time it is not possible to project the exact industries or proportion of different types of industries that may choose to locate at the project site. Tenants will be industries that need a minimum of 100 acres (per RCW 36.70A.368) for the development of their facilities. Possible tenants at the industrial park include:

#### ***Manufacturing:***

- Transportation Equipment
- Solar and Wind Energy Components
- Lumber and Wood Products
- Furniture and Fixtures
- Paper and Allied Products
- Printing, Publishing, and Allied Industries
- Rubber and Miscellaneous Plastics Products
- Stone, Clay, Glass, and Concrete Products

- Primary Metal Industries
- Fabricated Metal Products
- Industrial and Commercial Machinery and
- Computer Equipment
- Electronic and Other Electrical Equipment and
- Components Equipment
- Measuring, Analyzing, and Controlling
- Instruments; Photographic, Medical and Optical Goods; Watches and Clocks
- Miscellaneous Manufacturing Industries

***Eco Park Tenants:***

- Green House or Nursery (this may be especially appropriate on Area 2 due to the topography of the site).
  - A commercial green house or nursery could use CO<sub>2</sub> emissions produced by TransAlta Centralia Operations.
    - It may also be possible to use green house operations as a method of cooling waters from the TransAlta operations by employing an irrigation system that both waters plants at the facility and cools pre-treated industrial waters before discharge.
    - Plants grown on the site, such as bamboo, could be used to manufacture consumable goods on-site, such as textiles or wood products.
    - Waste from harvesting and processing plants could be used as biomass.
- Coal Combustion By Products Re-Use Center
  - Concrete, Concrete Products, and Grout;
    - These are products that can be produced by using fly ash, bottom ash, and boiler slag which are waste products generated from the coal combustion process.
    - The materials manufactured could be used for the roads, building slabs, sidewalks, and other necessary infrastructure and building components of the Industrial Park.
  - Shingles Manufacturing;
    - Currently bottom ash and boiler slag used for shingle manufacturing are transported off-site to manufacture.
    - By establishing a facility on-site, there is no cost for the transportation of raw materials.
    - Materials can be used on site.
  - Drywall manufacturing;
    - Drywall can be manufactured using FGD material created as a by product of coal combustion.

### **Emerging Trends Tenants:**

- Assemblage Plants of Finished “Green” Products
  - Components of Solar Panels
  - Batteries
  - Wind Turbine Generators
  - Manufacturing of Hybrid Vehicle Components
  - Manufacturing Materials to Update Electrical Distribution Equipment
    - A mutually beneficial situation would be a manufacturing/assembly industry that could work with an established company like Cardinal Glass (of Lewis County) to manufacture and assemble components necessary to create a finished product using the components of the established company’s manufactured product. The new company could manufacture components for solar panels, purchase the glass wares from Cardinal, and assemble at the site.
      - CTED, in *Washington State’s Green Economy*, January 2009, indicated that solar photovoltaic manufacturing is projected to provide up to 14,182 new jobs in the Pacific Northwest by 2025
      - Deposits of silica sand have been identified on Area 3.

Potential tenants identified were selected for a number of reasons, including capacity to take advantage of Lewis County’s underemployed skilled labor force, compatibility with available infrastructure at the site, and overall ability to perform in the economy of the Northwest.

The actual industries that choose to locate at the project site may vary from the listed manufacturing industries. However, analyzing impacts related to this hypothetical pattern of development as done in this document is intended to establish the general nature and range of impacts that might be expected.

## **Existing Conditions, Impacts of the Proposal, and Potential Mitigation Measures**

This section of the report is divided into 12 subsections, each dealing with an environmental concern. Subsections are: (1) Earth, (2) Air Quality, (3) Water Resources, (4) Wetlands, (5) Plants & Animals, (6) Noise, (7) Land & Shoreline Use, (8) Aesthetics (9) Light and Glare, (10) Transportation, (11) Public Services, and (12) Utilities.

Subsections describe existing conditions as well as anticipated probable impacts probable to result from the proposed actions. Mitigation measures required under existing laws and regulations, and other potential mitigation measures that could reduce probable environmental impacts of proposed actions are discussed.

Existing federal, state, county, and city regulations establish a strong framework for mitigation of adverse impacts. As individual projects are proposed, awareness and compliance with regulations will be necessary to reduce probable adverse impacts to the environment. The scope of this environmental

review document herein was identified by LCEDC in the scope of work/consulting agreement under which this document was prepared.

# Earth

## **EXISTING CONDITIONS**

The planning area for this project covers lands that were previously used for coal mining activities. The site is an approximate 4,500 acre tract of land located in northern Lewis County. Reclamation activities on Areas 1, 2, and 3 are anticipated to be complete in the next 5 years, while the earth moving reclamation activities on Areas 4, 5, 6, and 7 are anticipated to continue for the next 10 to 15 years. There are currently approximately 18 sediment ponds located on the project site, most of which, per the Federal Mine Permit, are to be reclaimed as wetlands.

The Federal Mine Permit indicates the project site's post mining distribution of land uses. Federal Mine Permit Figure 5.1-1b *Central Field Postmine Topography and Land Use* which has been included in this report in Appendix 1, indicates post mine topography and land uses, these were obtained from the Centralia Federal Mine Permit.

Governmental review of changes to the site after release from the Federal Mine Permit will fall under several regulatory programs.

- NPDES permit for construction activities (regulates temporary erosion control methods during construction).
- Grading permit from Lewis County (review of temporary erosion and sediment control plans and grading proposals).
- Compliance with Lewis County Critical Area Ordinances
  - Wetlands and streams
  - Steep slopes (landslide and erosion hazard)
  - Seismic Hazards

## **Topography**

The project site lies between the Cascade Mountains and the Coast Range. The elevation of the permit area ranges from approximately 200 to 800 feet above mean sea level. The terrain surrounding the site is characterized by areas of moderate relief consisting mainly of valleys between rounded hills. The topography is a result of uplift, faulting, and folding during the mountain building process and subsequent erosion.

The post mine topography plan was designed based upon the type of mining equipment and sequence of overburden, inter-burden, and coal removal, which is specific to each of the mining areas. The Centralia Federal Mine Permit indicates TransAlta Centralia Mining (TCM), as part of the reclamation efforts, is to re-grade all areas to a slope such that a static safety factor of 1 to 3 will be achieved. It was indicated that the overall goal in the post mining topography plan is to create a landform that is self sustaining without the use of water control structures that inherently have long term maintenance requirements.

Within the site, Big Hanaford Creek, whose perennial tributaries include North Hanaford, South Hanaford, and Pacwood creeks, flows into the Skookumchuck River approximately four miles west of the Centralia Mine.

As of date of this report:

- The movement of earth for reclamation of Areas 1, 2, and 3 is almost complete.
- Reclamation activities are still underway on Area 4; the completion of Earthwork is anticipated to be complete in the next two the five years.
- A lake (Central Packwood Lake) is being designed and will be constructed west of Area 4.
- Areas 5, 6, and 7 will continue to undergo earthwork associated with reclamation activities until 2014 to 2016.

The Federal Mine Permit indicates that the site will have a diverse topography following reclamation activities, including large areas for forestry, valley areas with lowland forest, wetland and riparian habitats, a permanent lake in the former Central Packwood Pit, and pasture areas both in the Packwood and Big Hanaford valleys and on upland plateau created by the capping of treatment ponds. The topography developed following mining operations is intended to redistribute overburden/interburden in a way that minimizes major material moves and results in the desired end land uses (pasture land and upland/lowland forests), and long term beneficial watershed ecology.

The Federal Mine Permit indicates that:

“the post mine topography in the central field [similar boundaries as the project area] is planned to be relatively diverse, including large areas for forestry, valley areas with lowland forest, wetland and riparian habitats, a permanent lake in the former Central Packwood Pit, and pasture areas both in the Packwood and Big Hanaford valleys and on an upland plateau created by the Pond 3D cap (*Pond 3D is at the southern boundary of the project site/Area 6*).

The West Packwood Pit (Areas 2 and 3) will have two different types of post mine topography. The southern edge of this area will have relatively straight contours, consistent with the traditional post mine topography design, while the remainder of the area will have a geomorphic topography.

The Central Packwood Pit will be reclaimed progressively as mining and dump sequencing allow. The Pit highwall will be regraded to achieve the required factors of safety and stability and will result in slopes varying from 3:1 to 6:1. Backfill material will be returned to the pit once mining is complete to create a shallower basin and littoral zone features, which will become the Central Packwood Lake.

Pond 3B and 3C areas will be reclaimed as wetlands, with topography relatively consistent with that present today. A barrier fill area, as described in Section 4.1, will be constructed north and east of these ponds to ensure a permanent, stable topography. This area will be contoured to a very gradual slope, ranging from 6:1 on the east side to 17:1 along the north side. The complete replanting plan for the Pond 3B area is described in Section 5.5.6. of the Mining permit.

A portion of the fine refuse in Pond 3D will be removed and pumped to Pond 3E. The dam face will be dozed southward to create a freely drained sloping surface with slopes suitable for upland forestry and agricultural hay meadows” (*mostly outside of project site*).

## **Geology**

Rocks exposed in the Centralia-Chehalis district range in age from early Tertiary to Quaternary. The coal deposits at the site are a part of the largest deposit of sub-bituminous and lignite fields of southwestern Washington. Total thickness of the coal bearing strata is approximately 2,500 feet. The strata contain marine, brackish water, and non-marine sedimentary rocks with inter-bedded volcanic ash.

The coalbeds at the project site were a part of the Skookumchuck Rock Formation, which is composed of nearshore marine and non-marine sedimentary rocks. The Skookumchuck Rock belongs to the upper member of the Eocene Puget Group<sup>7</sup>.

Coal seams were near the surface of the project site; open cast coal mining recovered a portion of the coal. Explosives were used in some areas at the project site to break through the surface. Once the coal seam was exposed, it was drilled, fractured, and mined in strips.

## **Soils**

Forestry was the predominant pre-mining land use in the permit area (Heilman 1978). Previous studies (Heilman 1978) have identified limiting factors that affect the capability of the soils for forestry, including:

- percent rock fragments,
- restrictive layers,
- drainage,
- permeability,
- available water capacity,
- rooting depth,
- incidence of flooding,
- logging system limitations,
- compaction potential,
- displacement potential,
- puddling potential,
- erosion potential,
- rockiness limitation,
- and drought potential.

The Surface Mining Control and Reclamation Act (SMCRA 1977) mandates certain minimum standards for coal mining and reclamation operations to protect the environment. One such standard is removal and replacement of topsoil to enhance vegetative productivity and achieve post-mining land use. The SMCRA also provides for the use of selected materials to supplement or substitute for topsoil if these selected materials prove to be as effective as topsoil in achieving environmental standards.

Reclamation activities include creating stable landforms with stable slopes and placing topsoil on the landforms at the site to support vegetation. Overburden materials were used as a substitute for topsoil. Overburden is a term used to describe materials that lie above the coal seam. Overburden is distinct from tailings, the materials that remain after the economically valuable components have been extracted from the seam.

Criteria used to evaluate the suitability of the topsoil at the project site included soil pH, texture, coarse fragments, organic matter, and structure consistency (Table 31). Existing conditions will be established by the Federal Mine Permit. The Federal Mine Permit states that TCM designed the post mining slopes to prevent erosion from occurring. Factors which reduce erosion include slope heights, slope lengths,

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<sup>7</sup> Washington Geology, Volume 30, No.12, July 2002.

use of drainages, and type of materials used for backfilling. TCM has reported that permanent gradient terraces have been used to resolve problems successfully in the past.

**Table 31- Topsoil Suitability Criteria**

Criteria (Suitability Reference)	Good	Fair	Poor	Unsuitable	Remarks
pH (Heilman 1978)	5.0 - 6.0	4.5 - 5.0 6.0 - 7.0	4.0 - 4.5 6.0 - 8.0	Less than 4.0 More than 8.0	pH may be amended by application of lime
Texture (USDA 1979)	Fine sandy loam, Loam, Silty loam	Clay loam, Sandy clay loam, Silty loam	Sandy clay, Silty clay, Loamy sand, Sandy loam	Clay 60% Sand 80%	Silty clay soils with low coarse fragments and high OM, or loamy sands with reverse, may be unsuitable
% Coarse Fragments (USDA 1979)	0-10	10-20	20-35	More than 35	
% Organic Matter (Heilman 1978)	More than 5.0	5.0-1.5	Less than 1.5		High clay % soils (45-60% with greater than 15% organic matter may be unsuitable
Structure / Consistency (USDA 1979)	Granular crumb Very friable - friable	Platy, blocky, <u>prismatic</u> Loose, firm	Massive single <u>grain</u> Very firm, extremely firm		Some structural disturbance can be anticipated as a result of salvage and handling soils

Source: Centralia Federal Mine Permit No WA-001E

The topsoil substitute criteria for Centralia that are currently approved and in use are compared to historical criteria in Table 32.

**Table 32- Overburden Suitability Guidelines**

Parameter (Method)	Historical Suitability Criteria <sup>(a)</sup>	Revised Suitability Criteria <sup>(b)</sup>	Conditions when Parameter is Analyzed
PH (Saturated Paste Extract)	5.0 - 9.0	4.5 - 8.3	Always
Electrical conductivity (mmhos/cm) (Saturated Paste Extract)	<8.0	<4.0	Always
Sodium Adsorption Ratio (Saturated Paste Extract)	<10.0	<12 for clay >40% <= [20 - ((clay%-24)/2)] for clay 24-40% <20 for clay <24%	When pH exceeds 6.5
Clay % (Buoyocous method)	<50%	Same	Measure texture in all claystone lithologies
Silt %	n/a	No specific criteria established	
Sand %	<85%	Same	
Mn (ppm) <sup>(c)</sup>	<60 ppm	n/a	n/a
Cd (ppm) <sup>(c)</sup>	<1.0 ppm	n/a	n/a
Hg (ppm) <sup>(c)</sup>	<0.5 ppm	n/a	n/a
Se (ppm) <sup>(c)</sup>	<2.0	<2.0	Measure in 10 percent of randomly selected samples
Acid Base Account / Acid Base Potential (Sobek method)	>-5 (tons per 1000 tons)	Same	Measure in near coal seams
B (ppm) (Curcumin method)	<8.0	n/a	n/a
Exchangeable sodium percentage	<15	n/a	n/a

Parameter (Method)	Historical Suitability Criteria <sup>(a)</sup>	Revised Suitability Criteria <sup>(b)</sup>	Conditions when Parameter is Analyzed
(ammonium acetate extractable cations)			
Nitrate – Nitrogen (ppm)	<20 ppm	n/a	n/a
P (ppm) (Bray method)	Fertility parameters	n/a	n/a
K (ppm) (ammonium acetate extractable cations)	Fertility parameters	n/a	n/a

(a) From original permit (superseded by revised criteria, where available)

(b) Added in 1989 Permit Revision.

(c) DTPA/ Hot water extractable

(d) A n/a denotes that a particular parameter was not analyzed as a part of the revised parameter list per the Federal Mine Permit.

Source: Centralia Federal Mine Permit No WA-001E

## **IMPACTS**

### **Construction Period**

#### **Erosion**

Sources for erosion and sedimentation within the project site boundaries include a number of natural and human causes. Active erosion from reclamation activities and maintenance on the site can be attributed to human activities. Natural erosion is present within drainage channels. Both natural and human actions can cause erosion resulting in sediment entering ditches and streams, potentially impacting aquatic species and water quality.

Construction of facilities to support capital intensive industries at the project site will require land clearing, grading, and construction of impervious surfaces. Changes at the project site will result in the volume of stormwater that must be managed. The capture and management of stormwater is very important to help ensure that erosion and sedimentation problems do not adversely impact Hanaford Creek, Packwood Creek wetlands, ponds and lakes and the Skookumchuck River.

Roads and access points to development Areas at the project site have been shown on concept plans to be developed on or adjacent to existing Mine Haul Roads. Cut and fills are expected to be needed to prepare sites and some road segments for construction. The extent of the grading and excavation on individual development areas will largely depend on the siting of the facilities within the Area.

The conceptual plan has not calculated specific grading requirements necessary to facilitate possible industries at the site. Major site re-grading is anticipated and cut and fill on individual development sites is expected to be necessary to create relatively level areas and terraces of at least 100 acres for parking, buildings, and storage. In addition, up to 200 acres of the project site outside of development areas may be developed for road and utility corridors.

Under the assumptions in this report, approximately 1,200 acres (1,000 acre development areas and 200 acres for infrastructure) of the approximate 4,500 acres will be graded over a span of 20 years. Additional area offsite may be disturbed for infrastructure service areas and corridors for sewer and water and rail.

Construction areas will be required to implement temporary erosion control measures as conditions associated with Lewis County grading permit and NPDES Permit.

Evidence of site conditions during mining operations indicates that grading activities can create unstable conditions on site such as slope failure from erosion and landslide. Underground conditions are not evaluated in this report but it is assumed that construction and development proposals could impact slope stability if not carried out in accordance with geotechnical recommendations developed on a case specific basis.

### ***Operational***

At build out of a development area at the project site, a tenant will be required to permanently vegetate areas, collect and treat stormwater, as well as take appropriate measures to detain stormwater in accordance with County and State requirements. Assuming the development at the project area is completed in accordance with applicable regulations, substantial impacts from the potential of erosion and increased runoff rates are not expected.

Existing materials do not indicate specific potential for landslide hazard due to cut and fills associated with construction of infrastructure and grading for site development. Preparation of a geotechnical report is suggested prior to undertaking site altering activities. Assuming that the site alterations are conducted in accordance with a geotechnical engineer's recommendations and applicable development regulations, an increase in the risk of landslides at the project site should not occur.

Existing materials do not indicate potential risk from seismic activity. The entire region is susceptible to impacts from seismic activity. Although seismic activity can cause damage, application of new building and development codes can reduce potential damage.

The relative risks for seismic activities at the project site relative to other sites in the area are not known. Project specific geotechnical investigations are recommended during design process for specific industries and infrastructure to address geologic issues and impacts. Project facilities will need to utilize standard engineering practices and meet applicable design standards to reduce potential for seismic impacts.

## ***MITIGATION MEASURES***

### ***Construction***

Measures will be required by Lewis County and the Department of Ecology during construction, which will include slope protection, collection, and treatment of stormwater runoff generated from construction at the project site.

Mitigating measures are required to be set forth in a Temporary Sedimentation and Erosion Control Plan required to be approved prior to construction and measures are to be followed during construction.

Site alterations at the project site should be conducted in accordance with a geotechnical engineer's recommendations and applicable development regulations. Lewis County Code 17.35A.923 provides specific provisions for alterations of landslide hazards and buffers.

Compliance with Lewis County Code and recommendations of licensed practicing geotechnical engineer should provide mitigation to impacts of construction activities that affect landslide and seismic hazard areas.

## **Operation**

Industrial operations usually do not involve moving large amounts of earth so most impacts are expected to occur during construction. If earth moving and grading are proposed during operations that could affect the potential for landslide, increased erosion or seismic risk these should be carried out under the supervision of a geotechnical engineer and approved by Lewis County.

### **Existing Regulations that Will Mitigate Project Impacts**

- National Pollutant Discharge Elimination System (NPDES) permit, administered by the U.S. Environmental Protection Agency and/or Washington State Department of Ecology (Ecology) for clearing and grading activities that disturb areas greater than or equal to five acres.
- Grading permit from Lewis County for all activities proposing the grading of 5,000 or more cubic yards of earthen material. A grading permit is also required if more than 50 cubic yards of earthen material is used to fill an area at a depth greater than 1 foot.
- Maintain a minimum 100-foot wide buffer between site developments and Class A regulated wetlands (LCC 17.35.610).
- Maintain a minimum 50-foot wide buffer between site developments and Class B regulated wetlands (LCC 17.35.610).
- Maintain a minimum 100-foot buffer between site developments and Type 3 streams (LCC 17.35.680).
- Maintain a minimum 50-foot buffer between site developments and Type 4 streams (LCC 17.35.680).
- Maintain a minimum 25-foot buffer between site developments and Type 5 streams (LCC 17.35.680).

### **Summary of Major Potential Mitigation Measures Expected to be applied through regulatory review**

- Surround all areas proposed for land clearing with silt fence, or other silt control measure, as approved by Lewis County and Ecology.
- Gravel site entrances to prevent sediment from leaving the site via construction vehicles.
- Mulch and/or seed exposed soils as soon as feasible to prevent soil migration.
- Construct and maintain approved stormwater management facilities for all areas developed within the project boundaries.
- Strict adherence to Best Management Practices during construction of site facilities.
- Install native shrub and tree plantings within wetland and stream buffers within the project area if they are unvegetated when site development starts.
- Assure that stormwater discharged to natural water resources is free of chemical and physical contaminants.
- Discharge of stormwater to natural water resources at rates below documented carrying capacities of individual wetlands or streams.

# Air Quality

## ***Local Air Quality***

Air quality is regulated by federal, state, and local agencies. A primary federal role has been to establish health-based standards for the allowable concentrations of air pollutants and develop the analysis procedures to determine compliance with these standards. The U.S. Environmental Protection Agency (EPA) established National Ambient Air Quality Standards (NAAQS) for a limited number of pollutants with the enactment of the Clean Air Act of 1970. These compounds are termed “criteria pollutants,” with a “primary” standard to protect human health and a “secondary” standard to protect welfare and quality of life.

Washington State’s role in protecting air quality has been to administer the provisions of the Clean Air Act by adopting the (NAAQS) and developing the permitting processes for industrial sources to ensure the federal standards are met. Air Operating Permits are authorized under the procedures established in WAC 173-401 and Title V of the 1990 Federal Clean Air Act Amendments. The terms and conditions of Air Operating Permits describes emissions limitations, operating requirements, monitoring requirements, recordkeeping requirements, and reporting frequencies for the permitted source. Conditions required under permits are determined necessary to assure and provide for certification of compliance with applicable local, state, and federal air pollution regulations and standards.

The Department of Ecology (Ecology) is responsible only for the permitting of very large new industrial sources; smaller sources are regulated by local air pollution control agencies, such as the Southwest Clean Air Agency (SWCAA). SWCAA is primarily responsible for the air quality of the Lewis, Cowlitz, Skamania, Clark and Wahkiakum county region. SWCAA may implement its own local regulations that are more stringent than the state or federal regulations if circumstances necessitate such action (RCW 70.94).

## ***Regional Climate***

The project site area is subject to the same Pacific Maritime climate in Western Washington and the Puget Sound Basin. The Pacific Maritime climate is characterized by moderate temperatures, wet winters, and frequent onshore flows of moist marine air. Monthly average temperatures (in Fahrenheit) range from 30’s and 40’s in winter and range from 50s to the high 70’s in summer. Data from Centralia, shows the annual precipitation averaged 45 inches from 1919-1996<sup>8</sup>.

In the Pacific Maritime climate regime, winds generally come from the south to the southwest in winter or during other rainy periods, with southwest winds predominating. Winds during fair periods, and generally throughout the warm months, are west to northwest. Historically, July is the driest month of the year. When combined with wind speeds and wind directions, it is the month with the greatest potential for fugitive dust emissions that might occur during site preparation activities.

## ***Existing Air Quality Non-Attainment Issues***

Washington State’s role in protecting air quality has been to administer the provisions of the Clean Air Act

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<sup>8</sup> National Climate Data Center

by adopting National Ambient Air Quality Standards (NAAQS) and developing permitting processes for industrial sources to ensure the federal standards are met. Currently, there are no areas of pollutant non-attainment in Lewis County. There is a proposed agreement between the State and TransAlta Centralia Operations anticipated to undergo public review, the proposed agreement outlines how TransAlta will voluntarily reduce mercury emissions and cut nitrogen oxide emissions from the coal fire plant.

**Table 33- Criteria Pollutants and Standards**

Pollutant	Description	Sources	Health Effects
<b>Carbon Monoxide (CO)</b>	An odorless, tasteless, colorless gas which is emitted primarily from any form of combustion.	Mobile sources (autos, trucks, buses), Wood stoves, Open burning, Industrial combustion sources.	Deprives the body of oxygen by reducing the blood's capacity to carry oxygen; causes headaches, dizziness, nausea, listlessness and in high doses, may cause death.
<b>Hydrocarbons (HC)</b>	Unburned, partially burnt fuel.	Mobile sources (autos, trucks, buses), formed by the incomplete combustion of fuel.	When combined with sun light produces photo chemical (smog)
<b>Lead (Pb)</b>	A widely used metal, which may accumulate in the body.	Leaded gasoline, Smelting, Battery manufacturing and recycling.	Affects motor function and reflexes and learning; causes damage to the central nervous system, kidneys and brain. Children are affected more than adults.
<b>Ozone (O<sub>3</sub>)</b>	Formed when nitrogen oxides and volatile organic compounds react with one another in the presence of sunlight and warm temperatures. A component of smog.	Mobile sources, Industry, Power plants, Gasoline storage and transfer, Paint.	Irritates eyes, nose, throat and respiratory system; especially bad for those with chronic heart and lung disease, as well as the very young and old, and pregnant women.
<b>Nitrogen Dioxide (NO<sub>2</sub>)</b>	A poisonous gas produced when nitrogen oxide is a by-product of sufficiently high burning temperatures.	Fossil fuel power, Mobile sources, Industry, Explosives manufacturing, Fertilizer manufacturing.	Harmful to lungs, irritates bronchial and respiratory systems; increases symptoms in asthmatic patients.
<b>Particulate Matter PM10 PM2.5</b>	Particles of soot, dust, and unburned fuel suspended in the air.	Wood stoves, Industry, Dust, Construction, Street sand application, Open burning.	Aggravates ailments such as bronchitis and emphysema; especially bad for those with chronic heart and lung disease, as well as the very young and old, and pregnant women.
<b>Sulfur Dioxide (SO<sub>2</sub>)</b>	A gas or liquid resulting from the burning of sulfur-containing fuel.	Fossil fuel power plants, Non-ferrous smelters, Kraft pulp production.	Increases symptoms in asthmatic patients; irritates respiratory system.

**Table 34- Air Quality and Standards**

Pollutants	National Standards		Washington State Standards
	Primary	Secondary	
<b>Carbon Monoxide (CO)</b>			
8 - Hour Average	9 ppm	9 ppm	9 ppm
1 - Hour Average	35 ppm	35 ppm	35 ppm
<b>Lead (Pb)</b>			
Quarterly Average	1.5 µg/m <sup>3</sup>	1.5 µg/m <sup>3</sup>	No standard
<b>Nitrogen Dioxide (NO<sub>2</sub>)</b>			
Annual Average	0.053 ppm	0.053 ppm	0.05 ppm
<b>Ozone (O<sub>3</sub>)</b>			
1 - Hour Average	0.12 ppm	0.12 ppm	0.12 ppm
8 - Hour Average <sup>B</sup>	0.08 ppm	0.08 ppm	No Standard
<b>Particulate Matter (PM<sub>10</sub>)</b>			
Annual Arithmetic Mean	No Standard	No Standard	50 µg/m <sup>3</sup>
24 - Hour Average	150 µg/m <sup>3</sup>	150 µg/m <sup>3</sup>	150 µg/m <sup>3</sup>
<b>Particulate Matter (PM<sub>2.5</sub>)</b>			
Annual Arithmetic Mean	15 µg/m <sup>3</sup>	15 µg/m <sup>3</sup>	No Standard
24-Hour	35 µg/m <sup>3</sup>	35 µg/m <sup>3</sup>	No Standard
<b>Sulfur Dioxide (SO<sub>2</sub>)</b>			
Annual Average	0.030 ppm	No Standard	0.02 ppm
24 - Hour Average	0.14 ppm	No Standard	0.10 ppm
3 - Hour Average	No Standard	0.5 ppm	No Standard
1 - Hour Average	No Standard	No Standard	0.40 ppm <sup>A</sup>
<b>Total Suspended Particulates</b>			
Annual Geometric Mean	No Standard	No Standard	60 µg/m <sup>3</sup>
24 - Hour Average	No Standard	No Standard	150 µg/m <sup>3</sup>

**Particulate Matter**

Particulate matter consists of particles of wood smoke, diesel smoke, road dust, pollen, or other materials. It is measured in two forms: total suspended particulate (TSP) and respirable or fine particulate matter. Fine particulate matter is divided into PM<sub>10</sub> and PM<sub>2.5</sub>. TSP is airborne particulate matter of all sizes; PM<sub>10</sub> is a subset of TSP and is defined as being smaller than 10 micrometers in diameter, PM<sub>2.5</sub> is smaller than 2.5.

The project site is located outside of any PM<sub>10</sub> maintenance areas, which are concentrated in the urban industrial areas of Everett, Seattle, and Tacoma. The closest comparable particulate monitoring station site is operated by SWCAA and is located in Longview, too distant to provide meaningful data. This

station is in a region that is much more densely settled than project site. Due to its less dense residential development, somewhat lower PM<sub>10</sub> concentrations are expected in the project areas.

Because of concerns about the effect of very fine particulates such as those found in wood smoke and combustion engine exhaust, the EPA established separate regulations in 1997 for ultra-fine particulate matter smaller than 2.5 microns in diameter (PM<sub>2.5</sub>). Monitoring for PM<sub>2.5</sub> has been performed in Centralia and shows 24-hour levels well below the NAAQS, with annual levels reaching the standard (Elliot, 2002). PM<sub>2.5</sub> levels at the project site would be expected to be lower than in the more heavily industrialized/urbanized area of Centralia.

### ***EXISTING CONDITIONS***

The project site is not adjacent to a nonattainment area for any criteria pollutant. The project site is adjacent to the TransAlta Centralia Operations. The Title V Air Operating Permit indicates that the power plant has the potential to emit more than 100 tons/yr of sulfur dioxide, nitrogen oxides, particulate matter less than 10 microns, and carbon monoxide (all of which are criteria air pollutants listed under the Federal Clean Air Act), more than 100 tons/yr of volatile organic compounds (VOCs), and the potential to emit more than 25 tons/yr of all hazardous air pollutant (HAP) emissions combined (which are listed under Section 112 of the Clean Air Act). Since the acquisition of the Centralia coal fire plant, TransAlta has installed scrubbers (pollution control devices) and installed low NO<sub>x</sub> burners, in efforts to reduce particulate emissions.

During the previous mining activities at the project site, air pollutants were emitted as fugitive emissions. Raw materials used at the mine included water for coal processing, fuel for vehicles, and miscellaneous chemicals for coal processing, laboratory analysis, parts cleaning and other incidental activities. Heavy equipment operations cause emissions of fugitive dust (inventoried by the SWCAA). Mining activities may commence adjacent to the project site depending on economic factors related to the cost of mining the coal.

Currently air quality is affected at the project site by the reclamation activities that are on-going, and anticipated to continue on parts of the project site for the next 10 years.

### ***Post Reclamation***

### ***IMPACTS***

The change to an industrial zoning designation on the former coal mining lands would allow for industrial uses at the project area that could result in activities with potential to increase pollutants into the atmosphere at the project site and elsewhere in the region. Impacts would occur during construction and during operations at the project site.

### ***Construction Impacts***

Principal pollutants of interest at the project site during construction are emissions from construction tasks (particulate matter), trucks and trains (diesel particulate matter, carbon monoxide and sulfur dioxide) and from potential industrial tenants. Other pollutants of concern could include emissions of hydrocarbons and hazardous air pollutants from industrial processes and diesel engines.

**Table 35- Construction Task and Potential Emissions**

<b>Construction Task</b>	<b>Emission Sources</b>	<b>Typical Emissions</b>
Land Clearing	Bulldozers and front-end loaders	TSP, PM10, PM2.5, CO, NOx, SO2, VOC, HAPs
Burning Woody Debris	Front-end loaders	PM10, PM2.5, CO, VOC, HAPs
Site Preparation	Scrapers, graders, backhoes, and trucks	TSP, PM10, PM2.5, CO, NOx, SO2, VOC, HAPs
Laying of Rail Siding	Graders, backhoes, and trucks	TSP, PM10, PM2.5, CO, NOx, SO2, VOC, HAPs
Building onsite Roads	Graders, backhoes, and trucks	TSP, PM10, PM2.5, CO, NOx, SO2, VOC, HAPs
Improving On-Site Storm Water Drainage Facilities and the Lake	Bulldozers, front-end loaders, backhoes	TSP, PM10, PM2.5, CO, NOx, SO2, VOC, HAPs
Preparing Tenant Pads and Installing Utilities	Scrapers, graders, backhoes, and trucks	TSP, PM10, PM2.5, CO, NOx, SO2, VOC, HAPs

Note: TSP = total suspended particulate, CO = carbon monoxide, SO2 = sulfur dioxide, VOC= volatile organic compounds, HAP= hazardous air pollutants

Earth moving and site grading during the construction phase can cause fugitive dust (particulate matter) to disperse offsite in windy or dry weather. Dirt can also be tracked-out onto public roads and dispersed by the traffic. Construction equipment emits fine particulate matter, carbon monoxide, sulfur dioxide and nitrogen dioxide, from diesel engines used for earthmoving, site clearing and grading. The burning of any woody debris releases carbon monoxide, fine particulate matter and VOCs.

Air quality impacts during the construction phase will be regulated for each phase. Best Management Practices guidelines (such as those in the “Guide to Handling Fugitive Dust from Construction Projects,” of the Associated General Contractors) will need to be utilized to minimize fugitive dust traveling offsite. Burning permits will be required before burning woody debris from land clearing.

**Operational Impacts**

The change to an industrial zoning designation at the former mine site would allow for industrial uses at the project area that could result in an increase in pollutants into the atmosphere at the project site. A Prevention of Significant Deterioration (PSD) Permit is required for projects that may significantly increase air pollutant emissions. The Washington DOE prepares PSD permits for industrial sources of air pollution (except for projects involving Washington’s Energy Facility Site Evaluation Council). The PSD permit applications have two analytical elements:

- a determination of the *Best Available Control Technology (BACT)* for each PSD significant pollutant; and

- modeling analysis that demonstrates no significant environmental deterioration resulting from the proposed project.

One aspect of new source review is the requirement that the industries submit Notices of Construction detailing their industrial process, the emissions from these processes and assessing the health risk from toxic air contaminants. The Washington Clean Air Act requires all new sources and modifications that increase emissions to employ Best Available Control Technology (BACT) (RCW 70.94).

The industrial tenants of the Industrial Park will be regulated through a system of registration with SWCAA. All sources of air contaminants are required to register with SWCAA in accordance with the provisions of the Washington Clean Air Act (RCW 70.94) and SWCAA 400-100 "Registration Requirements and Operating Permit Fees." Registration of air contaminant sources makes it possible to maintain an accurate record of air contaminant emissions, and judge the effectiveness of air pollution control strategies. New source review of air contaminant sources, and modifications, also allows SWCAA to verify that air contaminant sources are in compliance with applicable air pollution control regulations.

The proposed action is to change the project site to an industrial zoning designation so that it can house many different types of large industries. Some potential types of business and emissions are summarized in Table 36.

**Table 36- Business and Emissions**

<b>Business Type</b>	<b>Emission Sources</b>	<b>Typical Emissions</b>
Warehousing (ancillary to manufacturing) with Rail Access	Diesel trucks, yard locomotive, fork lift trucks	PM10, PM2.5, CO, NOx, SO2, VOC, HAPs
Manufacturing with Rail Access	Furnaces, diesel trucks, yard locomotive, fork lift trucks	PM10, PM2.5, CO, NOx, SO2, VOC, HAPs
Light Manufacturing with Rail Access	Diesel trucks, yard locomotive, fork lift trucks	PM10, PM2.5, CO, NOx, SO2, VOC, HAPs
Wood Products Manufacturing	Diesel trucks, yard locomotive, fork lift trucks, lumber kilns	PM10, PM2.5, CO, NOx, SO2, VOC, HAPs

Note: TSP = total suspended particulate, CO = carbon monoxide, NOx=nitrogen dioxide, SO2= sulfur dioxide, VOC =volatile organic compounds,

Operational activities cause the release of fine particulate matter, carbon monoxide, sulfur oxides and nitrogen dioxide from diesel-powered trucks and railway locomotives. Each industrial tenant at the project site will have its own unique emissions. Specific details of their emissions and the applicable control methods will not be known until they submit Notices of Construction to SWCAA. The analysis required as a part of the Notice of Construction will describe a broad range of typical industrial facilities, and the types and levels of emissions they would be expected to generate.

On-going improvements in automobile and truck engine technology results in lower emission rates per vehicle, but increased traffic volumes cause higher total emission quantities. Total emissions at the time of a full build out of the site may be substantially lower due to technological improvements of autos.

Emissions from industrial processes will be regulated by SWCAA. If SWCAA regulations are followed, no significant adverse impacts on air quality as defined by legislation are expected to result from the proposed action.

## **MITIGATION MEASURES**

### ***Mitigation Measures (expected to be required through regulatory review)***

- Any burning of land clearing debris is anticipated to be limited to the construction phase; and would be conducted under permit from SWCAA occurring under meteorological conditions that promote good dispersion of smoke. Typical conditions placed by SWCAA on debris burning include keeping burn piles dry and small in size with a minimum of dirt in the piles.
- Fugitive dust from earth-moving activities will be minimized by the proposed project layout that avoids clearing and earth moving near project boundaries.
- Industries must register with SWCAA in accordance with RCW 70.94.151 and SWCAA 400-100.
- New source review of air contaminant sources by SWCAA will assure that sources are in compliance with applicable air pollution regulations.

### ***Potential Mitigation Measures***

- Reduce track-out of dirt onto public roads by surfacing exit aprons with quarry spalls
- Cover loads of dirt and asphalt
- Ensure adequate freeboard when loading trucks
- Use water truck to keep unpaved site roads moist, and reduce fugitive dust emission
- Minimize the area of bare soil by building in phases
- Pave small areas at a time and avoid paving during periods of stagnant weather
- Keep the engines of heavy construction equipment in good working order to minimize diesel smoke and odors.
- Larger industrial tenants with a substantial number of employees could examine the possibility of creating ride-share programs to reduce vehicle traffic.
- Agreements can be made with individual tenants at the park to stack and arrange employee's shifts start and stop times at non-peak hours to reduce congestion on roads.

# Water

## **EXISTING CONDITIONS**

Surface water, groundwater, and wetlands are all interrelated attributes of water resources at the site. They are considered together in this section in order to facilitate examination of the impacts on all water resources that could result from industrial development within the planning area. Previous mining activities have disturbed the natural drainage at the project site.

As a part of the reclamation, the Federal Mine Permit indicates that the topography of the reclaimed watersheds in the permit area will be re-graded to establish the approximate original topographic features and to blend in with the landscape of the surrounding undisturbed area. The planned reclamation activities include re-configuration of the general geomorphologic characteristics for each affected area. Where feasible, a geomorphic approach will be adopted for the design of ground slope, and channel drainage characteristics. Where the post-mine topography (namely the terrace slope) dictates otherwise, a structural approach is to be adopted for the design of primary and secondary drainage channels.

## **Surface Water**

Surface water is water collecting on the ground or in a stream, river, lake, wetland, etc. and is related to water collecting as groundwater. Surface water is naturally replenished by precipitation and naturally lost through discharge and subsurface seepage into the groundwater. Mining activities have directly disturbed portions of the natural drainages in the permit area, requiring the reconstruction of the general watershed characteristics. Section 5.6 of the Federal Mining Permit indicates that the planned reclamation activities will include re-configuration of the general geomorphic characteristics for each affected area.

## **Hanaford Creek**

Big Hanaford Creek flows along the North edge of the proposal site. The Federal Clean Water Act (FCWA, 1972, and later modifications, 1977, 1981, and 1987) established water quality goals for the navigable (surface) waters of the United States. One of the mechanisms for achieving the goals of the Clean Water Act is the National Pollutant Discharge Elimination System (NPDES) of permits which is administered by the Environmental Protection Agency (EPA). The EPA has delegated responsibility to administer the NPDES permit program to the state of Washington on the basis of Chapter 90.48 RCW which defines the Department of Ecology's (Department) authority and obligations in administering the wastewater discharge permit program.

The regulations adopted by the state include procedures for issuing permits (Chapter 173-220 WAC), water quality criteria for surface and ground waters (Chapters 173-201A and 200 WAC), and sediment management standards (Chapter 173-204 WAC). These regulations require that a permit be issued before discharge of wastewater to waters of the state. The regulations also establish the basis for effluent limitations and other requirements which are to be included in the permit.

The Skookumchuck Dam Flood Operations agreement DEIS (July 2002)<sup>9</sup> indicates that "turbidity remains

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<sup>9</sup> Skookumchuck Dam Flood Operations Agreement, US Army Corps of Engineers, Seattle District, Draft EIS Statement, Centralia Floor Damage Reduction Project, Chehalis River WA General Re-evaluation Study

a principle concern in Hanaford Creek. Hanaford Creek is on the Washington State Department of Ecology's 303(d) list for elevated levels of fecal coliform, which is presumed to stem from heavy agricultural activities adjacent to the creek.

TransAlta Centralia Mining discharges to Big Hanaford Creek are regulated and limits are established by National Pollutant Discharge Elimination System Waste Discharge (NPDES) Permit No. WA0037338 (issuance data May 3, 2005 with subsequent modifications on December 21, 2005 and December 20, 2007). The NPDES permit met statutory requirements for authorizing wastewater discharge, including those limitations and conditions believed necessary to control toxics, protect human health, aquatic life and the beneficial use of waters of the State of Washington.

The previous NPDES Permit NO. WA0037338 for the TransAlta Centralia Mining LLC facility (covering the project site) was issued on June 9, 2000 and modified on November 30, 2000, and December 12, 2003. The previous permit placed effluent limitations on turbidity, total suspended solids (TSS), pH, dissolved oxygen, total petroleum hydrocarbons, temperature, and total iron. An application for permit renewal was submitted to the DOE on June 3, 2004 and accepted on June 21, 2004.

The NPDES Permit indicates that there are ten outfalls on the TransAlta mining site; all of these outfalls discharge runoff from the mined areas which is treated by flocculation and sedimentation. The discharge outfalls are all overflow structures from treatment ponds, with receiving waters being Hanaford Creek and its tributaries and Mitchell Creek and its tributaries. Sedimentation ponds on the site were designed so that the runoff occurring as a result of a 10 year 24-hour precipitation event will be treated to comply with TransAlta's NPDES permit effluent limitations. Following the reclamation activities on the site, permanent impoundments on the site will be developed, there are currently plans for the Central Packwood Lake adjacent to Area 2, 3, and 4 on the project site. The Lake is planned to serve as a part of the stormwater management system on the site. A summary of compliance, indicating water quality condition, that was compiled and reviewed as a part of the NPDES permit issued May 3, 2005 (expiration of June 30, 2010) is presented in Table 37, Performance Summary.

**Table 37 - Performance Summary (Violations)**

Begin Date	Monitoring PT	Parameter	Value Type
1-Mar-02	9	IRON, TOTAL (AS FE)	AVM
1-Dec-01	9	SOLIDS, TOTAL SUSPENDED	AVM
1-Jan-02	9	SOLIDS, TOTAL SUSPENDED	AVM
1-Mar-02	9	SOLIDS, TOTAL SUSPENDED	AVM
1-Dec-02	9	SOLIDS, TOTAL SUSPENDED	AVM
1-Jan-03	9	SOLIDS, TOTAL SUSPENDED	AVM
1-Feb-03	9	SOLIDS, TOTAL SUSPENDED	AVM
1-Dec-01	9	SOLIDS, TOTAL SUSPENDED	MXD
1-Jan-02	9	SOLIDS, TOTAL SUSPENDED	MXD
1-Mar-02	9	SOLIDS, TOTAL SUSPENDED	MXD
1-Jan-02	10	IRON, TOTAL (AS FE)	AVM
1-Dec-00	10	OXYGEN, DISSOLVED (DO)	MIN

Begin Date	Monitoring PT	Parameter	Value Type
1-Jan-02	10	PETROLEUM HYDROCARBONS, TOTAL RECOVERABLE	AVM
1-Dec-00	10	PH	MAX
1-Dec-00	10	PH	MIN
1-Dec-00	10	SOLIDS, TOTAL SUSPENDED	AVM
1-Nov-01	10	SOLIDS, TOTAL SUSPENDED	AVM
1-Dec-01	10	SOLIDS, TOTAL SUSPENDED	AVM
1-Jan-02	10	SOLIDS, TOTAL SUSPENDED	AVM
1-Feb-02	10	SOLIDS, TOTAL SUSPENDED	AVM
1-Mar-02	10	SOLIDS, TOTAL SUSPENDED	AVM
1-Dec-00	10	SOLIDS, TOTAL SUSPENDED	MXD
1-Nov-01	10	SOLIDS, TOTAL SUSPENDED	MXD
1-Dec-01	10	SOLIDS, TOTAL SUSPENDED	MXD
1-Jan-02	10	SOLIDS, TOTAL SUSPENDED	MXD
1-Feb-02	10	SOLIDS, TOTAL SUSPENDED	MXD
1-Mar-02	10	SOLIDS, TOTAL SUSPENDED	MXD
1-Dec-00	10	TEMPERATURE , WATER (DEG C)	AVM
1-Dec-00	10	TURBIDITY	AVM
1-Nov-01	10	TURBIDITY	AVM
1-Dec-01	10	TURBIDITY	AVM

Note: AVM is Monthly Average; MXD is Daily Maximum, MIN is Minimum

Source: Fact Sheet for NPDES Permit No. WA0037338

Big Hanaford Creek, whose perennial tributaries include North Hanaford, South Hanaford, and Packwood creeks, flows into the Skookumchuck River approximately four miles west of the Centralia Mine. The Hanaford Creek Basin is a Sub-Basin of the Skookumchuck River Basin.

Hanaford Creek and its tributaries make up the largest sub basin in the Skookumchuck. Historically the sub basin was utilized by chum, coho, and steelhead. In the lower reaches the mainstream has an area where the stream flows through two separate channels. The more northern branch has been extensively ditched and provides no significant habitat. The more southern branch is the main stream that fish would utilize. The City of Centralia has indicated that a culvert underneath Big Hanaford Road is scheduled to be replaced in August or September 2009, unblocking several miles of upstream habitat where the stream flowed through timberlands.

North Hanaford Creek, the first tributary to Hanaford Creek, flows through agricultural lands in the lowest reaches. The creek is only utilized by anadromous fish for approximately the first two miles.

The second tributary to Hanaford Creek, South Hanaford Creek, for most of its length flows through agricultural lands. It has been extensively ditched and has very little riparian cover. The upper reaches flow through timberlands where there where no apparent spawning areas.

The third main tributary is Packwood Creek, which flows almost entirely through the project site. There are seven culverts along its length one of which is under the main haul road for the mine. Historically, this creek was a spawning ground for chum; it is mapped as having both coho and steelhead usage.

The final tributary in this system is Snyder Creek, which is mapped as having both steelhead and coho usage.

Hanaford Creek is listed as a Class A (excellent) water body by the State. This designation defines water quality characteristics that should be maintained in the drainage. The characteristic uses designated for protection in a Class A waterbody, per WAC 173-201A-030(2), such as Hanaford Creek are:

- Water supply (domestic, industrial, agricultural)
- Stock watering
- Fish and shellfish
  - Salmonid migration, rearing, spawning, and harvesting
  - Other fish migration, rearing, spawning, and harvesting
  - Clam and mussel rearing, spawning, and harvesting
  - Crayfish rearing, spawning, and harvesting
- Wildlife habitat
- Recreation (primary contact recreation, sport fishing, boating, and aesthetic enjoyment)
- Commerce and navigation

### **Groundwater**

The December 1992 Chehalis River Basin Action Plan states, “specific ground water problem areas have been identified throughout the basin due to contamination from various waste management practices including improperly operated or designed septic systems, landfills, storm drains, leaking underground storage tanks, improper handling of toxic substances, leaking drums, impoundment, pesticide disposal, spills, and drug labs.”

The Department of Ecology Affected Media and Contaminants Report lists 37 sites in the Chehalis River Basin as contaminated by a variety of pollutants. Twenty-seven of the sites are listed as sources of actual or potential ground water contamination (DOE, 1992). One major threat to surface and ground water supplies is the large number of leaking underground storage tanks. An estimated 5-9% of all tanks throughout the state are leaking. Forty percent of all tanks are more than 15 years old. Nearly 80% are bare steel with no corrosion protection. One quarter of all tanks statewide are not monitored to detect leaks, while 42% use only daily inventory records for this purpose.

Ground water problem areas in the Chehalis River Basin have been identified by county and state health departments. Lewis County: Ford's Prairie, Waunch Prairie, Coal Creek, Salzer Valley, South Chehalis, Skookumchuck Valley, and Coffee Creek. Thurston County: Bucoda/Tenino area, Rochester, Grand Mound, Scott Lake, Scatter Creek, and Maple Lane Correctional Facility. Mason County: Simpson Lake and Lake Nahwatzel. Grays Harbor County: Central Park, Bench Drive in Aberdeen, Ocean Shores, Endresen Road in Hoquiam, Lake Sylvia in Montesano, Westport, Strawberry Hill in Elma, Highland Drive in Cosmopolis, and the Grayland area (Morris, 1988; Beck, 1975; Stevens, et al. 1974). The most common causes of contamination listed were failing septic systems, wood waste, solvents, agricultural waste (manure and pesticides), automotive waste, mining spoils, landfills, polychlorinated biphenyls, and industrial waste (DOE, 1992b).

Some groundwater is currently being drawn up in wells serving the TransAlta Centralia Operations.

The Federal Mine Permit contains a discussion on the probable hydro-geologic consequences required to satisfy the 1077 Surface mining Control and Reclamation Act (SMCRA). The previous mining activities and subsequent backfilling currently taking place on the mined areas can potentially have two effects on groundwater quantity at the site:

- Drawdown in adjacent formations as a result of excavation and removal of aquifer material; and
- Changes in recharge as a result of differences in backfill material properties.

Section 6.2.1.2 of the Federal Mine permit indicates that drawdowns may occur in the Skookumchuck Formation adjacent to the mined areas. The degree of drawdown would be a function of the hydraulic properties of the formation material. Mining activities in areas adjacent to the alluvial valleys could also potentially affect the alluvial aquifers (i.e. create drawdown).

The Federal Mine Permit goes on to indicate that the “replacement of overburden and reclamation in the North Field and Central Fields is not anticipated to have any significant effect on groundwater recharge, compared to the pre-mining baseline conditions, as the hydraulic characteristics of the backfill area similar to that of the pre-mining material. The primary mechanism of recharge to the backfill areas from surface infiltration and migration of regional groundwater flow through the Skookumchuck material will remain essentially unaffected. However, the replacement overburden is significantly more homogenized and better sorted than the original overburden material. Backfilling of mined areas replaces the laterally discontinuous mined coal seams with fairly well sorted mine spoils.”

Potential effects to groundwater quantity as a result of reclamation to the planned post mine topography include:

- Changes in groundwater recharge as a result of changes in slope and vegetation; and
- Changes in recharge as a result of the development of permanent surface water features.

Section 6.2.2.2 of the Federal Mine Permit states that the replacement of overburden and reclamation in the Central Field (area of project site) is not anticipated to have any significant effect on groundwater recharge, compared to pre-mining base line conditions, as the hydraulic characteristics of the backfill are similar to that of the pre-mining material. The primary mechanism of recharged to the backfill areas from surface infiltration and migration or regional groundwater flow through the Skookumchuck material will remain essentially unaffected. However, the replacement overburden is significantly more homogenized and better sorted than the original overburden material. Backfilling of mined areas replaces the laterally discontinuous mined coal seams with the fairly well sorted mined spoils.

The Federal Mine Permit asserts that changes in groundwater recharge resulting from the reclaimed slopes and vegetation are not expected to be significant, as the reclamation plans for the permit areas have been developed to restore the post mine slopes, drainage and vegetation as close to pre-mining conditions as reasonably possible.

### **Storm Water Control Systems**

To control sedimentation and flow rate impacts, when mining at the site was in operation, the use of temporary flow diversions at the mine site was a high priority in the drainage and sediment control plan in order to assure efficient and safe operations during the rainy winter months. Numerous diversion structures channel flow away from the active mining areas ahead of mining and also channeled flow from lands undergoing backfilling and grading into sediment ponds. An extensive summer temporary diversions construction program was maintained to prepare for the winter season

Section 5.6.3.2 of the Federal Mine Permit states that as a result of mining, a pit has been created in the Central Packwood Area, adjacent to Big Hanaford Creek on the northeast side of the Packwood Field. During reclamation of the Central Packwood mine-disturbed area, this final pit will be reclaimed to form an end-pit lake, referred to as the Central Packwood End-Cut Lake.

Inflows to the lake are to be surface water runoff from the reclaimed Central Packwood area and will enter the lake through several drainage channels that will be constructed as part of the reclamation phase. Central Packwood Lake will discharge to Big Hanaford Creek through a drainage channel on the north side of the lake.

Central Packwood Lake will be constructed by filling much of the final mine pit with overburden material, such that the maximum depth in the center of the lake will be approximately 220 feet. When full, at the water surface elevation of 220 feet above sea level, the surface area of the lake will be approximately 8,400,00ft<sup>2</sup> (193 acres), the volume will be approximately 460,000,000 ft<sup>3</sup> (10,600 ac-ft) and the average lake depth will be approximately 55 feet. The elevation-surface area-storage curve for the lake depth will be approximately 55 feet.

Inflows to the lake will be surface water runoff that are planned to enter the lake through 15 drainage channels as demonstrated in Figure 5.6-1b *Central Field Postmine Channel Classification* of the Federal Mine Permit included in this report in Appendix 1. All of these drainage channels are to be vegetated channels in their upper reaches, and the smaller one will be vegetated for their entire lengths. Five of the inflow channels, located on the south and east sides of the lake, will have alluvial channels in their lower reaches.

For an investigation of the hydrologic feasibility of Central Packwood Lake, a water balance model was developed to estimate time to fill the lake, seasonal water fluctuations, and seasonal outflow discharges. The Federal Mine Permit indicates simulations using the water balance model were from the period of 1981 to 2000.

The Federal Mine Permit indicates that surface drainage was a factor in the design of the post mining topography. Primary and secondary drainages are to be reconstructed based upon the locations of the original channels. TransAlta Centralia Mining was to maintain the horizontal and vertical similarities of the pre-mine channels to duplicate the general pre-mine topography and drainage patterns as much as possible. The channels are to have natural patterns similar to the pre-mine topography and will be located to minimize erosion and slippage. Following final grading, channels will be installed to route surface runoff into sedimentation ponds. Major reconstructed surface drainage channels are to be lined with gravel and rock to serve as permanent rock drainage ways when required, per the Federal Mine Permit.

## **IMPACTS**

### **Construction Impacts**

Construction impacts from project development are largely related to increased siltation and rates of runoff from clearing.

### **Operational Impacts**

#### **Surface Waters**

Changes to the rate of runoff from developed areas is a possible result of the release of stormwater from

areas developed with industrial uses. A detailed impact analysis is not within the scope of this document.

At build out of the site, the area of land covered by impervious surface will be greater than under current conditions at the project site. Post mining conditions include minimal impervious areas; a full build out of the approximately 4,500 acre site could result in 1,200 acres of developed, possibly impervious surface (approximately 27% of the total project site). The result of this increase in developed area will be an increase in surface runoff and commensurate decreased in evapotranspiration (on areas reclaimed with vegetation) and infiltration.

Site runoff will be collected, conveyed, detained and treated in accordance with stormwater management plans developed for construction of infrastructure and for individual site development. The intent of these plans and the regulations under which they are prepared is to minimize impacts to water resources through Best Management Practices.

## **MITIGATION**

### **Ground Water**

Detailed evaluation of the effect of development of development areas of the site (in relation to post mine conditions is beyond the scope of this report. The major concern may be reduction of infiltration to the groundwater. This concern is partly addressed by only developing some of the project area. Aspects of the proposal that can minimize this impact include use of facilities that allow infiltration such as open ditches for storm water conveyance and infiltration ponds for treatment and detention.

### **Regulatory Requirements that Mitigate Impacts**

As industry develops at seven areas at the project site, it will be required to obtain the following permits for stormwater management prior to development:

- National Pollutant Discharge Elimination System (NPDES) Construction Activities permit, administered by the U.S. Environmental Protection Agency and/or Washington State Department of Ecology for clearing and grading activities that disturb areas greater than or equal to five acres.
- During construction at individual sites within the project area, stormwater will be treated through existing systems associated with the mining and steam plant operations, or through modified systems, and will be discharged in accordance with a new NPDES permit or TransAlta's NPDES permit transferred to new users. Compliance with the NPDES permit conditions will ensure that temperature and other water quality standards are not exceeded in receiving waters. Once the area is stabilized it may be released from the NPDES construction permit.
- NPDES permit to release stormwater from an industrial site. Washington State administers a combined Federal and State program to limit pollutant discharges to streams and groundwater (WAC 173-200 and 220). Discharge of industrial stormwater typically require such permits. The permits require that "all known, available, and reasonable treatment" be applied to remove pollutants from the waters before they are discharged. The permits may also require monitoring of the receiving water. Monitoring wells and quarterly sampling for pollutants are typically required when treated industrial wastewater is discharged to an aquifer.
- A grading permit is required from Lewis County if more than 50 cubic yards of earthen material is used to fill an area at a depth greater than 1 foot.
- Lewis County Critical Areas Permit (if work in wetlands or wetland buffers is proposed). Lewis

County requires a permit and wetland mitigation plan for all impacts to wetlands.

- Future tenants must apply for Section 404 permit from the US Army Corps of Engineers if wetlands are proposed to be filled or drained.
- A Section 401 Water Quality Certification must be obtained from Washington DOE for all proposed impacts to Wetlands and surface waters.
- NPDES Permit for Wastewater Discharge to surface water. If discharge of treated domestic sewage or industrial process water is proposed to surface water a NPDES permit for such discharge is needed from the Department of Ecology.
- Permit for discharge of industrial process water to ground water. A permit is required from the Department of Ecology for an industry to discharge wastewater from industrial processes through underground injection wells or infiltration ponds.
- Permit for treatment of domestic sewage through drainfields. Treatment of sewage in smaller drainfield systems is permitted through the County Department of Health. Treatment of sewage through larger drainfields is permitted through the State Department of Ecology.

### **TESCP - Temporary Erosion and Sediment Control Plans**

Prior to any construction at the site, a temporary erosion and sediment control plan will be required to be submitted to Lewis County demonstrating the use of best management practices (BMP's). Erosion and sedimentation control BMP's are designed to prevent, minimize, or capture sediment and pollutants released during construction or under post project conditions. Some of these BMP's may include trapping sediment before it reaches the storm drainage detention system; prevent or minimize vehicular tracking away from the project site; address effects of seepage and slope failure; construct energy dissipaters, bank reinforcement, and retaining walls; landscape; or stabilize exposed soils. These BMP's may be either source control, runoff treatment, or stream bank control BMP's which can be selected, designed, and maintained according to the appropriate technical references in the Lewis County Code. Practices which may be used at the proposal site include:

#### **Sediment Control Practices**

- **Silt fences:** primarily a sediment control practice, silt fences temporarily impound water, allowing sediment to settle out. Water seeps through the fabric, leaving sediment trapped and retained behind. This practice can be an effective sediment control measure if a comprehensive system is designed, installed properly, and maintained regularly.
- **Straw Bales:** bales of straw may be used as a sediment control practice in place of silt fence or in drainage ways. Straw is also used effectively as a mulch to provide erosion control.
- **Rock Check Dams:** often used to prevent gully erosion from scour caused by concentrated flows. Rock check dams consist of rip rap grade stone placed perpendicular to concentrated flows in ditches or swales. Rock dams also serve as sediment trapping structures by slowing flows and allowing sediment to drop out of runoff.
- **Compost Socks:** mesh tubes are filled with compost and often placed perpendicular to concentrated flows (similar to the positioning of silt fence, perforated silt dikes, or rock check dams) to slow flows and trap sediment. They are also placed at the top of slopes to intercept sheet flows and reduce erosion on slopes.

- ***Inlet Protection Devices:*** Inlet protection is an important component of a comprehensive erosion and sediment control system. Silt fences, compost socks, and perforated silt dikes, as well as other products can be placed around and in inlets. Maintenance must be performed until the site is stabilized, at which time the device can be removed.
- ***Sediment Control Basins:*** Sediment control basins are typically earthen dams that temporarily impound sediment-laden runoff, allowing the sediment time to settle out. The clarified water is decanted through a perforated standpipe. There are other products and techniques that can be used to increase the sediment trap efficiency of sediment control basins, such as wrapping the standpipe with filter fabric or using polymers to flocculate and settle particulates.

### **Erosion Control Practices**

- ***Vegetative Cover:*** maintaining vegetative cover during the construction process is the most effective erosion control practice. Mass grading exposes construction sites to erosion. Phasing of grading activities maintains strategic vegetative cover and minimizes the amount of disturbed land at any given time, which reduces erosion.

Another technique for maintaining vegetative cover is to design new development to fit into existing landscapes, minimizing the need for grading. Finally, utilizing a building envelope which confines traffic and land disturbing activities to the minimum area needed for construction will maintain vegetative cover.

There are two types of vegetative cover: temporary and permanent. Temporary cover is used when grading is not completed but will be suspended, or when grading is completed outside the specified planting dates for permanent cover. Typically, fast-establishing low-cost small grain species such as oats or rye are used for temporary cover. Permanent cover is used after grading is complete and provides a permanent stand of vegetation, a protective layer to prevent soil erosion. Common turf grass species are typically used in seed and sod form. A more sustainable cover of native vegetation consists of a mixture of deep-rooted grasses and forbs. The strategic use of native landscaping on a minimum of 30% of any given site will contribute to on-site water management through improvement in soil quality that results in higher infiltration and percolation rates.

- ***Mulch:*** is the application of vegetative residue/organic matter to protect the soil surface from the impact of raindrops or the erosive force of wind until vegetative cover is established. It can be applied in lieu of temporary seeding but is typically applied in conjunction with a permanent seeding. Mulches typically consist of small grain straw, cellulose fiber, or wood chips.
- ***Rolled Erosion Control Products (RECP):*** typically referred to as erosion control mats or blankets, these products are applied to provide protective cover until vegetative cover is established. There are a number of different materials that RECPs are made of, ranging from straw blankets to coconut fiber to synthetic fiber blankets. The type of blanket should be specified for site conditions. Proper installation of the matting—including trenching in, overlaps, and staple placement—is critical to the successful utilization of these products. RECPs can be used to control erosion from sheet flows or concentrated flows of runoff. Seeding is done prior to installation of RECPs, or blankets with seed imbedded can be purchased to accomplish seeding and erosion control simultaneously. These products are especially effective at controlling erosion from concentrated flows and are a preferred practice where concentrated flows occur.

**Groundwater Intrusions:**

- Reduction in deep percolation may occur if infiltrating water does not spread out within the soils under the impervious areas. To minimize the likelihood of such a reduction, providing for some percolation of water below impervious areas can be accomplished by using perforated stormwater conveyance pipes, permeable asphalt, infiltration of roof drain water, or other measures consistent with sound engineering practices.
- Using native vegetation for landscaping on industrial sites; will reduce the need for long-term irrigation, and provide native habitat.

**Other Potential Surface Water Mitigation Measures:**

- Install large woody debris within stream reaches that are lacking high quality pool environs.
- Install native shrub and tree plantings along stream buffers within the project area that are unvegetated when the site development starts.

## Wetlands

### **EXISTING CONDITIONS**

Wetlands within the mine area were previously characterized as a part of the Federal Mine Permit, using two different methods: referencing the United States Fish and Wildlife Service's (1980) National Wetlands Inventory Maps and via detailed wetland delineations conducted using methodology created by the Washington State Department of Ecology (Environmental Laboratory 1987, Washington State Department of Ecology 1997, Section 3.4.5.2). The detailed wetland delineations were previously prepared for two individual projects at the Centralia Mine: (1) Pond 46 project and (2) the Kopiah Project (Kopiah Excess Spoil Area and Pond 47); both of these delineations are outside of the project area.

Detailed wetland delineations in accordance with the Washington State Department of Ecology per the Lewis County Critical Areas Ordinance have not been conducted within the project area.

The US Fish and Wildlife's (USFW) National Wetlands Inventory (NWI) Maps indicate there are wetlands within the project area. The wetlands are shown on Figure 3.4-2b *Central Field Wetland* of the Federal Mine Permit included in Appendix 1 of this report. These maps were created based on aerial photos taken in the 1980's. Wetlands as identified on the project area are primarily in the drainage corridor that extends northwest to southeast through the project area dividing development Areas 2, 3, and 4 and Areas 1, 5, 6, and 7. A portion of the wetlands along Big Hanaford Creek, located immediately north of the project area may slightly extend into the project area. All the wetlands identified in the Wetland Inventory Maps are palustrine. Palustrine wetlands are dominated by trees, shrubs, persistent emergent moss, and lichens. They are non-tidal wetlands with derived salts less than 0.5%. Palustrine wetlands can be marshes, swamps, bogs, fens, and prairies.

The wetland inventory maps indicated three classes of palustrine wetlands at the project area:

- Emergent - characterized by herbaceous perennial vegetation including moss and lichen
- Forested - wood vegetation less than 6 meters (approximately 20 feet) in height.
- Scrub-Shrub - wood vegetation less than 6 meters (approximately 20 feet) in height, including true shrubs, young trees, and mature trees that have been stunted by growth in the water regime.

There are currently a series of sediment ponds at the project site. As a part of the reclamation efforts, the Federal Mine Permit indicates these ponds are scheduled to be decommissioned and reclaimed by 2015. Upon reclamation of the project site, approximately 9 sediment ponds will be converted to vegetated wetlands per the Federal Mine Permit Figure 5.6-1b *Centralia Field Post Mine Channel Classification* included in Appendix 1 of this report.

### **Regulations and Permitting**

#### **IMPACTS**

Impacts to wetlands are either direct or indirect. Direct impacts occur when project construction occurs within wetlands. Indirect impacts occur when the project causes changes to wetlands even though no construction occurred there; indirect impacts are usually attributable to changes to water flow and infiltration.

Since detailed project plans are not yet prepared, impacts to wetlands can not be precisely identified at the present time. In preparing the conceptual site layout, substantial efforts were made to avoid direct wetland impacts. Previously disturbed corridors and roads are followed for new roads and utilities.

Development sites are selected and defined to exclude wetlands. No existing wetlands, or very limited, direct wetland impacts are forecast for development of essential infrastructure (sewer, water, roads) and industrial sites. One exception is rail facilities which of necessity tend to follow low lying corridors. If rail facilities are constructed as part of the project, site specific delineation and mitigation plans will likely be required. A second exception may be sewage treatment facilities, which also of necessity occupy low lying ground.

### **MITIGATION MEASURES**

Wetlands will be addressed when infrastructural improvements are designed and when tenants propose project developments within the project site. When wetlands are identified, project plans must include measures to avoid, minimize, and mitigate impacts to wetlands. The Lewis County Code 17.35A establishes regulations for wetlands in accordance with RCW 36.70A.060 *Natural Resource Lands and Critical Areas - Development Regulations*.

Prior to development at the Industrial Park in areas where wetland impacts could occur, wetlands shall be identified in accordance with the State requirements (RCW 36.70A.175). Areas within Lewis County meeting the criteria in the Washington States Wetlands Identification and Delineation Manual are designated as critical areas and are subject to the Lewis County Critical Areas Ordinance (LCC Chapter 17.35).

Before wetlands are altered:

- A Section 404 permit must be obtained from the US Army Corps of Engineers.
- A Section 401 Water Quality Certification must be obtained from Washington Department of Ecology.
- Lewis County Critical Area Permit must be obtained including:
  - A wetland mitigation plan for all impacts to wetlands (LCC 17.35.620(1)).
  - Minimum mitigation ratios ranging from 1.5 to 4 acres of mitigation for every acre of wetland impacted (LCC 17.35.620(1)(a)).
  - Minimum 100-foot wide buffer between site developments and Class A regulated wetlands (LCC 17.35.610).
  - Minimum 50-foot wide buffer between site developments and Class B regulated wetlands (LCC 17.35.610).

Potential indirect impacts to wetland habitat function can be prevented or substantially mitigated by the design of industrial facilities, and development regulations that will assure the protection of wetlands. These include measures to assure the following:

- Prevent sediments and other pollutants entering wetlands from untreated stormwater and/ or wastewater;
- provide for wildlife movement between wetland/upland areas; and
- minimize artificial light and glare originating from nearby operations.

The following mitigation measures required by code will help to ensure wetland resources will be protected while allowing development to occur.

- Surround all areas proposed for land clearing with silt fence or other silt control mechanism during construction period as approved by Lewis County and Department of Ecology.
- Mulch and/or seed exposed soils as soon as feasible to prevent soil migration.
- Construct and maintain approved stormwater management facilities for all areas developed within the project boundaries.
- Strict adherence to Best Management Practices during construction of site facilities.
- Plant native shrubs and trees within wetland buffers within the project area that is unvegetated when site development starts.
- Remove, if any, non-native shrubs/woody vines (Scotch broom, English ivy, evergreen blackberry, Himalayan blackberry) from wetland buffer areas, and replant with native species.
- Assure that stormwater discharged to wetlands is free of chemical and physical contaminants.

# Plants and Animals

## **EXISTING CONDITIONS**

### **Plants**

The Washington State Department of Natural Resources was contacted with a request to provide any records/documents of rare plants or high quality ecosystems in the vicinity of the project area. The Department of Natural Resources responded by indicating that they had no records<sup>10</sup> in their databases for rare plants and/or high quality ecosystems at the project site (Appendix 4 of this report).

The project site has previously experienced significant modifications by humans, as it was previously stripped of vegetation for mining operations. As a part of the reclamation efforts, it is TransAlta's responsibility to revegetate the land per the Federal Mine Permit. TransAlta has indicated in their Federal Mine Permit that their primary objective was to establish a diverse and self sustaining vegetation community on all lands affected by mining activities.

Reclamation activities on Areas 1, 2, and 3 of the project site should all be completed within the next 5 to 8 years; monitoring environmental conditions can be required and some action may be necessary to address environmental concerns. Reclamation activities on Areas 4, 5, 6, and 7 could continue on for the next 10 to 15 years.

The Federal Mine Permit indicates that within the majority of the project site, land will be reclaimed to an upland forestry condition. Other areas at the project site will be reclaimed to lowland forest and pasture lands as indicated in Figure 5.1-1b Central Field Postmine Topography and Land Use of the Federal Mine Permit, included in Appendix 1 of this report.

### **Animals<sup>11</sup>**

Following reclamation, the project site is expected to be used by big game animals, including black-tailed deer, Roosevelt Elk, black bear and cougar. Other mammals expected to use the area include raccoon, mink, otter, skunk, beaver, muskrat, hare, deer, mouse and vole. Fish and birds will also make extensive use of the project area.

Wildlife habitat in the proposal area following reclamation is expected to be typical for the general area. Wildlife habitats at the project site and adjacent areas are typical of the habitats on the western side of the Cascade Mountains in western Washington. Douglas fir plantations or unmanaged forestlands dominate the uplands, while pasturelands occupy valley bottoms.

The Washington Department of Fish and Wildlife (WDFW) Habitat and Species Maps 2004 indicate the presence of Roosevelt Elk winter range in a large part of the project site. There are no critical wildlife habitats, no unusual wildlife features, and no critical winter concentration areas that exist for big game, although populations tend to increase during winter in the vicinity of the project site because of its slightly lower elevation. Waterfowl concentration areas do occur in the Hanaford Valley, and a Wood Duck breeding area has been identified upstream of the ponds located north of the project site in Thurston

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<sup>10</sup> The Washington State Department of Natural Resources database tracks information since 1977.

<sup>11</sup> Extensive studies of existing fauna are included in Section 3 of the Federal Mining permit application

County (WDFW 2204). There are no staging areas, large roosting sites, or other unique features critical to any particular species. Riparian habitats are locally abundant and a typical habitat in the Pacific Northwest.

Because of ample average annual precipitation, water is not a limiting factor to wildlife habitats or use, evidenced by numerous ponds, natural wetlands and drainages throughout the Permit and adjacent areas.

Wildlife habitats were classified (in the Permit) according to dominant vegetation. The following five wildlife habitats in the Permit and adjacent areas are described in the application:

- Upland coniferous forests;
- Upland hardwood forests;
- Bottomland riparian forest;
- Sedge-meadow/pasturelands; and
- Wetlands and ponds.

The land use map shows the post mining reclamation distribution of these areas over the proposal site.

The Department of Fish and Wildlife manages the Scatter Creek Wildlife Area, located north of the project area in Thurston County. It lies in the Puget Sound Trough lowlands with the Cascade Mountain Range to the east, the Willapa Hills to the southwest, and the Black Hills to the northwest. The Skookumchuck unit, located 11 miles northeast of Centralia and downstream from the Skookumchuck Dam in Thurston County, is managed for multiple species as part of a dam mitigation agreement. The Department of Fish and Wildlife manages the operations of a fish hatchery on approximately 9 acres. The hatchery is currently undergoing renovation to current standards. The hatchery is an essential tool in the conservation of native salmon stocks.

The US Department of Interior, Fish and Wildlife Service, Western Washington Fish and Wildlife Office documents, by County, listed and proposed endangered and threatened species and critical habitat; candidate species, and species of concern; included in Appendix 2.

### ***Fish***

The proposal area drains to South Hanaford Creek, Packwood Creek and Hanaford Creek. Fish habitat is described in section 3.5.1 of the Mine Permit application as representative of riverine tributaries of low elevation, low gradient areas that have been influenced by agriculture (lowlands) and forestry (uplands) in western Washington. Early settlers attempting to drain the wetlands of the valley bottoms channelized portions of the streams that pass through the Permit and adjacent areas many years before inception of the Centralia Mine. Studies have shown, however, that some anadromous coho salmon still use these streams to obtain access to headwater breeding areas. Other fish identified in area streams include stickleback, mudminnow, dace and sculpin.

Finn (1973) described the physical habitat, water quality, anadromous fish use of the tributaries forming the Big Hanaford Creek drainage (i.e., Packwood, North Hanaford and South Hanaford creeks). Only the upper half of the 60 miles of total available stream that occur in the drainage are accessible to fish, because early settlers channelized the creeks near the present-day Centralia Mine. In addition, historical forest harvesting has cleared many riparian areas. Salmonid habitat quality was significantly reduced by

agricultural and forest practices through a corresponding increase in stream temperatures, turbidity, embeddedness of stream substrates, the percentage of fines, a decrease in dissolved oxygen, and the abundance of large woody debris.

### **Central Packwood Lake**

As a part of the reclamation efforts on the site, a large lake (covering approximately 193 acres) will be constructed. The Central Packwood Lake (to the west of Area 4) has been designed with two gravelly shoal areas along the north shore that is intended to provide habitats that may be suitable for spawning by fish populations in the lake. The Federal Mine Permit indicates that the primary objective of the lake is to ensure that the characteristics of the new lake are suitable to provide an environment that will support a diverse aquatic community with sustainable fish populations and to provide a diversity of shoreline characteristics in the littoral zone that will also provide habitats for amphibians, waterfowl and shore birds.

### ***IMPACTS***

Of the approximately 4,500 acres that comprise the project site, it has been approximated that only around 1,200 acres at the project site are candidate for industrial development and infrastructure corridors. In addition to land for industrial developments, the project area consists of a large lake (Central Packwood Lake, 194 acres), steep slopes, wetlands, and critical area buffers that are not suitable for development. The remaining lands of the project site will be utilized as open space and as a buffer; these lands are anticipated to be retained to their reclaimed condition. Approximately 3,300 acres of reclaimed upland & lowland forest and pasture lands will provide habitat for various mammals, birds, reptiles and amphibians, and insects.

### **Vegetation**

Development of an industrial park at the project site will have a direct impact to vegetation within the project site. Approximately 1,200 acres of the total 4,500 acres could be developed, while maintaining 3,300 acres of wetlands, lakes, upland and lowland forest. The 1,200 acres used for industrial purposes and infrastructure improvements would largely occur on lands scheduled for conversion to upland forests and pasturelands as part of the reclamation process.

### **Animals and Fish**

Under reclaimed conditions, the approximately 4,500 acre proposal site would contribute directly to improved wildlife habitat and indirectly to improve fisheries habitat. At a gross assessment level, the impact of the proposal is that approximately 1,200 acres of potential wildlife habitat would be converted to industrial use. This area was proposed to be reclaimed predominantly to upland forest and pastureland conditions in the Federal Mining Permit; the majority of the proposed wildlife habitat area (3,300 acres) will be retained as proposed in the mine reclamation permit.

Wetland areas and creeks were avoided in planning for infrastructure improvements to serve the project site, it is the intent of the project to not directly impact wetlands and creeks. Indirect proposal impact to fish habitat would primarily be a result of reduced vegetated area and would be primarily focused on Packwood and Hanaford Creeks. Final proposed design will include proper management and treatment of stormwater to mitigate stream flow fluctuation and water quality impacts to minimize effects on fish in the streams at the project area. Development will be sited away from close proximity to streams to reduce the likelihood that fish are impacted by decreased shade, loss of riparian, habitat, erosion, increased water temperatures, etc. The culverts for access roads will be designed to provide adequate fish passage.

As a part of the design of facilities at the industrial park, substantial buffers and setback from streams and wetlands, and the on-site treatment prior to discharge of wastewater and/or stormwater will help recharge natural ground water and contribute to stabilizing stream flows.

## **MITIGATION**

### **Vegetation**

#### **Mitigation Measures Required by Lewis County Code:**

- Potential impacts to plant species protected under the Endangered Species Act will require consultation with the USFWS. (No such impacts are yet identified).
- Conversion of forested areas to non-timber usage requires a Class IV General Permit from Washington Department of Natural Resources (WAC 222-16-050(2)).
- Maintain a minimum 100-foot wide buffer between site development and Class A regulated wetlands (LCC 17.35.610).
- Maintain a minimum 50-foot wide buffer between site development and Class B regulated wetlands (LCC 17.35.610).
- Maintain a minimum 100-foot wide buffer between site development and Type 1, 2, and 3 streams (LCC 17.35.680(1)(a)).
- Maintain a minimum 50-foot wide buffer between site developments and Type 4 streams (LCC 17.35.680(1)(a)).
- Maintain a minimum 25-foot wide buffer between site developments and Type 5 streams (LCC 17.35.680(1)(a)).

#### **Other Potential Mitigation Measures:**

- Preserve and properly buffer forested wetlands.
- Establish and maintain corridors of native vegetation between upland and lowland areas.
- Vegetate areas within the project area that are not proposed for development with native plants and trees for a managed long-term habitat as proposed in the Mining Reclamation Plan.
- Install and maintain native shrub and tree plantings within wetland buffers within the project area that are unvegetated when site development starts.

#### **Required Mitigation Measures**

- Potential impacts to species protected under the Endangered Species Act will require consultation with the USFWS.
- The lands are planned to be reclaimed to upland and lowland forest and pasture lands. Conversion of forested areas to non-timber usage requires a Class IV General permit from Washington Department of Natural Resources (WAC 222-16-050(2))
- Work within stream channels will require a Hydraulic Project Approval (HPA) Permit from the Washington Department of Fish and Wildlife.

- Culverts will be required to facilitate fish passage within streams that are known or suspected to have fish habitat. Whenever feasible, utilize bridges or bottomless culverts to facilitate migration of fish and other aquatic life.
- Implement vegetation measures required by Lewis County Cod noted in previous section.

# Noise

## EXISTING CONDITIONS

Noise is defined as excessive or undesired sound. Human sensitivity to sound depends on its intensity, frequency, composition, and duration. Noise is measured on a scale whose units are termed decibels (dB). In order to represent the wide range of sounds audible to human ear, the scale is logarithmic. An increase of 10dB is perceived as doubling of apparent loudness, and an increase of three to five dB is noticeable under typical listening conditions. Sounds levels from a number of sources combine nonlinearly (for example, a project general noise level of 50 dBA upon a receiver with an existing background noise level of 50 dBA results in a cumulative noise level of 52 dBA; the impact of the added noise of three dBA).

The Washington State Department of Ecology (DOE) has developed maximum permissible environmental noise levels that a noise source may cause at its property line (WAC 173-60-040). The permitted levels vary depending on the land uses of the noise source and the receiving property. Lewis County has adopted the State standards by reference. The standards are shown in Table 38, and those applicable to the proposal are shown in **bold**. The maximum permissible noise levels are the limits a project can generate at its boundary with other land uses; they are not the sum of a project and the background non-project levels.

**Table 38 - Washington State Maximum Permissible Environmental Noise Levels in dBA**

Land Use of Noise Source:	Land Use of Receiving Property			
	Class A (Residential)		Class B (Commercial)	Class C (Industrial)
	Day	Night		
Class A (residential)	55	45	57	60
Class B (commercial)	57	47	60	65
<b>Class C (industrial)</b>	<b>60</b>	<b>50</b>	<b>65</b>	<b>70</b>

Note: Between the hours of 10 p.m. and 7 a.m. on weekdays and 10 p.m. and 9 a.m. during weekends, the maximum limits for rural residential receivers are to be reduced to 10dBA within residential receivers are to be reduced by 10 dBA within residential receivers. For noises of short duration these limits can be exceeded by a maximum of dBA for 15 minutes/hour (corresponding to the noise metric L25), 10 dBA for 5 minutes/hour (L8.33) or 15dBA for 1.5 minutes/hour (L2.5).

## Other Noise Regulations

This project is subject to several types of noise regulations:

- State and county regulations deal with the sound levels generated by onsite sources. The onsite train and truck traffic and any noise-generating equipment from the industrial tenants must be calculated at the property lines and compared to these regulations. Train travel on interstate tracks (such as the BNSF mainline) is exempt from these regulations.

- Federal guidelines address the cumulative increase in sound levels due to a project, whether generated onsite or offsite. These guidelines qualitatively characterize the effects of increased noise levels and, although they do not have the force of law, they assist in identifying potential impacts.
- Federal regulations set maximum noise levels for locomotive and railcars at standard distances and speeds and varying years of manufacture.

TransAlta has a Federal coal mining permit for the lands adjacent to the site. As mining operations commence adjacent to the site, noise will be generated from blasting, truck operations, and the excavation and grading of earth.

At this time the project site is undergoing reclamation, noise generated at the site can largely be associated with the reclamation efforts. These efforts involve large vehicles operating on unpaved haul roads transporting topsoil and grading and excavation of topsoil.

Other noise at the project site could be generated as mining efforts adjacent to the site commence. The mining operations adjacent are currently on hold. As mining operations commence north and south of the site, it is likely that noise caused by infrequent scheduled blasting of the coal seams will be heard at the project site.

Noise associated with train operations occurring adjacent to the site at the TransAlta Centralia Operations will be heard on portions of the project site. Ambient noises in the area from traffic on Big Hanaford Road and operation associated with the energy generation operations at the TransAlta facility may also be heard on parts of Areas 1, 2, 3, 4, and 7.

## ***IMPACTS***

There are approximately ten rural residential dwelling units a half a mile northeast of the northern boundary of the site, these residential units are buffered from the project area by lands designated by Lewis County as Class B Farmlands. The rest of the project site is adjacent to an inactive coal mine that is shown on the Lewis County Zoning Map as being zoned Mineral Resource Land. There are no institutional or park lands adjacent to the site or within close vicinity.

### ***Construction Noise***

Under State and Lewis County regulations (WAC 173-60-050), the noise from construction activities is exempt from noise standards during daylight hours (7 a.m. to 10 p.m. weekdays and 9 a.m. to 10 p.m. weekends) for receivers in rural and residential districts. Some types of noise are fully exempt from the Maximum Permissible Noise Level standards, such as noises from construction activities (in commercial zones) and safety equipment, e.g. backup alarms or sirens. Motor vehicle traffic traveling on public roads is exempt from the noise regulations summarized in Table 38 but the project's onsite truck and train traffic is not.

Traffic within the site will increase noise levels internal to the site. However, the proposed circulation system and 100 acre minimum lot size with buffering system will limit the increase of noise level experiences off-site.

During construction, noise levels would temporarily increase near construction sites due to heavy equipment use and construction materials transport. As shown in Table 39 noise levels generated during construction vary widely, reflecting the differences in site conditions and construction phases. During

some phases, for example, equipment may not operate or may idle for long periods of time. However, sometimes several units of similar equipment may operate simultaneously, causing noise levels at the high end of the range.

**Table - 39. Noise Levels of Typical Construction Equipment**

<b>Equipment</b>	<b>Typical Sound Level (dBA) at Distance of 50 Feet</b>
Bulldozer	80
Front-end Loader	72-84
Jackhammer or rock drill	81-98
Backhoe	72-93
Scraper and grader	80-93
Concrete pump	81-83
Concrete vibrator	76
Concrete and dump trucks	83-90
Air compressor	74-87
Pile Drivers (peaks)	95-106
Pneumatic Tools	81-98
Roller	73-75

Source: US EPA "Noise from Construction Equipment and Operations (US EPA)

Daytime construction is exempt from noise regulations, and may exceed Washington's noise regulation recommended for residential and commercial land uses. If construction occurs at night, the Washington noise regulation would apply. In addition, the noise limits are 10-dBA lower between 10 p.m. and 7 am weekdays (10 p.m. to 9 a.m. weekends), for residential areas, to account for the increased sensitivity of people trying to sleep. By meeting these standards, construction activities are not expected to cause significant noise impacts.

While it is difficult to predict the amount of noise a potential industrial user will generate, construction noise would be reduced with properly sized and maintained mufflers, engine intake silencers, engine enclosures, turning off idle equipment, and confining some activities to daytime hours. The construction contracts could specify that mufflers be in good working order and that engine enclosures be used on equipment when the engine is the dominant source of noise. Stationary equipment could be placed as far away from sensitive receiving locations as possible.

Back-up alarms are exempt from the Washington noise ordinance, but they are among the most noticeable sounds from a construction site. Where feasible, equipment operators could drive forward rather than backward to minimize this noise. Requiring operators to lift rather than drag materials wherever feasible could also minimize noise from material handling.

Construction equipment anticipated to be needed for the development of infrastructure and buildings will be substantially smaller equipment than the materials used for coal mining and subsequent reclamation activities on the site.

### ***Operational Noise Impacts***

Noise generated from operations of individual tenants should generally be below legislated standards. Operational noises will be reviewed for compliance with local and State regulations at the time of development review if environmental review suggests the tenant may not meet Washington Administrative Code regulations regarding maximum permissible sound levels or in the event of a complaint of non-compliance.

### ***MITIGATION***

#### ***Construction***

- Construction noise would be reduced with properly sized and maintained mufflers, engine intake silencers, engine enclosures, turning off idle equipment, and confining activities to daytime hours. Construction contracts could specify that mufflers be in good working order and that engine enclosures be used on equipment when the engine is the dominant source of noise.
- Stationary equipment could be placed as far away from sensitive receiving locations as possible.
- Back-up alarms are exempt from the Washington noise ordinance, but they are among the most noticeable sounds from a construction site. Where feasible, equipment operators could drive forward rather than backward to minimize this noise. Requiring operators to lift rather than drag materials wherever feasible could also minimize noise from material handling.
- Scheduling the noisiest construction tasks for daytime hours will reduce noise impacts.

#### ***Operational***

- If the development of a new rail spur occurs at the site, mitigation of railroad noise may be necessary; some mitigation of railroad noise may be accomplished by maintaining or enhancing dense vegetative buffers between the rail facilities and other uses or facilities.

## Land Use

### **EXISTING CONDITIONS**

The location of the project site is approximately 5 miles east of the City of Centralia's City/Urban Growth Area in unincorporated Lewis County. The project site was previously used for surface coal mining and is currently undergoing reclamation in accordance with Office of Surface Mining (OSM) Surface Mining Permit WA-0001E. Areas 1, 2, and 3 are currently undergoing a determination by the OSM to certify that these Areas have undergone the appropriate procedures to be considered suitable for industrial development per OSM regulatory guidelines. There are approximately 3,800 acres of the project site zoned as Mineral Resource Lands, with an approximate 650 acres zoned Forest Resource Lands, and approximately 50 acres zoned for Rural Residential. Lewis County Zoning Map has been included in the report in Appendix 1. The Lewis County Comprehensive Plan Existing Land Use Map shows the mined lands as *Undeveloped* with a small portion of the mining lands as *Rural-Open*.

### **Existing Regulations**

Implementing the proposal is expected to involve a change of the Lewis County Comprehensive Plan designation for the project site to a master planned location for major industrial activity. Actions will facilitate reuse of a minimum of 1,000 acres of land at the site formally used for surface coal mining for large tract industrial developments; the total project area encompasses approximately 4,500 acres.

RCW36.70A.368 allows counties planning under the GMA to designate a master planned location for major industrial activity outside Urban Growth Areas (UGAs) on lands formerly used or designated for surface coal mining and supporting uses. Under this provision, Lewis County is authorized to designate major industrial development on areas of former surface coal mining uses that have had a surface coal mining operation in excess of 3,000 acres that ceased operation after July 1, 2006, and located within 15 miles of the I-5 corridor.

### **RCW 36.70A.368, Summary:**

A GMA planning county meeting specified eligibility criteria is authorized to permit master planned major industrial development on lands outside an urban growth area that have been formerly used for coal mining. Prior to undertaking the planning for such development, a county must consult with the cities within the county in order to develop a process for designating the master planned locations where the industrial activity may take place. In order to be eligible to engage in the industrial activity authorized under the act, a county must: (1) have had a surface coal mining operation in excess of 3,000 acres that ceased operation after July 1, 2006, and (2) that is located within 15 miles of the Interstate 5 corridor.

The siting of the planned industrial development is limited to lands that:

- were formerly used or designated for surface coal mining and supporting uses;
- encompass at least 1,000 acres in the aggregate, but which may be composed of several parcels that are not contiguous; and
- are suitable for manufacturing, industrial, or commercial uses.

The comprehensive plan for the industrial development must ensure that:

- the location of the development is consistent with the specified siting requirements;

- provisions are made for the development of any new infrastructure that may be necessary; and
- environmental review takes place in accordance with specified requirements.

Once a county amends its comprehensive plan to designate a master planned location for the industrial development, the county may approve a specific industrial activity without any further amendment of its comprehensive plan. However, criteria for the approval of a specific industrial activity must be specified in development regulations that include the following requirements:

- the site must consist of at least 100 acres of land formerly used or designated for surface coal mining and supporting uses;
- the site has been or will be reclaimed as land suitable for industrial development;
- urban growth will not occur in adjacent nonurban areas;
- environmental review must be conducted in accordance with the State Environmental Policy Act;
- commercial development must be directly related to manufacturing or industrial uses; and
- commercial uses shall not exceed 10 percent of the total gross floor area of buildings or facilities in the development.

Although the designation of a master planned location for major industrial activity under this act must be implemented through an amendment to a county's comprehensive plan, such amendment is exempt from the GMA requirement limiting a county to one amendment of the comprehensive plan per year. Accordingly, a county's comprehensive plan may be amended without limitation for the purposes of the planning authorized under this act.

The GMA requirements for the implementation of master planned major industrial development (see RCW 36.70A.365) and industrial land banks (see RCW 36.70A.367) are not applicable to the master planned industrial activity authorized under RCW 36.70A.368. Accordingly, the provisions of RCW 36.70A.368 create a third, independent basis for the authorization of major industrial activity outside of a UGA. A comprehensive plan amendment designating a master planned location under this act may be subject to appeal. In addition, a county's subsequent approval of a specific major industrial activity at the planned location is subject to appeal under the Land Use Petition Act.

Designation of a master planned location for major industrial activities is an amendment to the comprehensive plan of the county. The master planned location must include criteria for the provision of new infrastructure and an environmental review.

Once the master planned location is designated, approval of a specific site development does not require further comprehensive plan amendment. The County must adopt a process for reviewing and approving a specific major industrial development in development regulations which must include the following criteria:

- (a). The site must consist of 100 or more acres of land formerly used or designated for surface coal mining;
- (b). Urban growth will not occur in the adjacent nonurban areas;
- (c). Environmental review must occur at the project level or the project must be consistent with a planned action which has undergone environmental review.

(d). Commercial development shall not exceed 10% of the total floor area of buildings and must be directly related to manufacturing or industrial uses.

**Adjacent Uses**

Uses adjacent to the site are described in Table 40.

**Table 40 - Adjacent Uses**

	<b>Adjacent Uses to the Project Site</b>
<b>West</b>	Use of Lands west of the site: (1) TransAlta Centralia Operations is immediately west of the site. (2) TransAlta coal mining operations. (3) Undeveloped lands with a Forest Resource Lands zoning designation.
<b>East</b>	Use of Lands east of the site: (1) TransAlta coal mining operations. (2) Undeveloped lands with a Forest Resource Lands zoning designation.
<b>North</b>	Use of Lands north of the site: (1) Northwest - a part of the TransAlta Centralia Operations. (2) North - TransAlta Mining Operations. (3) Northeast - Agricultural pasturelands.
<b>South</b>	Use of Lands south of the site: (1) TransAlta coal mining operations. (2) A small part of lands immediately south of the project site outside of the Kopiah coal mine area is undeveloped and is shown to have a Forest Resource Lands zoning designation.

There are approximately fifteen residential units a half a mile north of the project site along the northwestern boundary. A floodplain is located between these rural residential homes and the project site boundary,

Due to the previous disturbance of the site, it is not anticipated that there will be cultural artifact issues. Section 2.4.4 of the Federal Mine Permit indicates that there are no cultural or historic sites listed in the National Register of Historic Places within the affected area of the mining and reclamation operation, including the Federal coal lease area. Section 3.8.1 of the Federal Mine Permit indicates that none of the TransAlta sites have been associated with people important in local, state, or national history - nor have any early historical transportation routes crossed the permit area. It goes on to state that based on lack of significant archeological resources in the areas surveyed and on aboriginal land use trends in the Chehalis River Basin, the probability of locating significant cultural resources in other areas is considered

limited.

### ***IMPACTS***

Under the project actions it is anticipated the site would be designated for major industrial activity through an amendment of the Lewis County Comprehensive Plan, the site would be rezoned to an industrial zoning designation, and a process for Lewis County to review development applications at the project site would be incorporated into the Lewis County Code. Approximately 1,000 acres of the total project site is assumed to be developed for industrial purposes with an additional 200 acres on-site used for infrastructure corridors. The remaining 3,300 acres of the 4,500 project site is expected to be managed as upland forest, wetland, stream, lake and pastureland to conform to post mining reclamation conditions.

The industrial uses on the project site should have minimal impact on land uses adjacent to the site. Most of the site is adjacent to TransAlta coal mining lands. The residential uses in the vicinity of the project site will be buffered from industrial development at the project site by their distance from the site.

Project impacts associated with storm water runoff, air emissions, noise, light and glare that could affect adjacent uses are expected to be addressed by regulations intended to mitigate potential impacts. See separate sections for further discussion.

### ***POTENTIAL MITIGATING MEASURES***

None are deemed necessary.

# **Aesthetics**

## ***EXISTING CONDITIONS***

Mining operations at the project site began in 1967 with the construction of infrastructure such as an office, shop, warehouse facilities and mining of coal followed in 1971. Coal mined at the project site was crushed, washed to remove non-coal materials, sampled for quality, and then conveyed from the project site to the existing power plant. Since 1971, the aesthetic character of the project site could be defined by low gradient lands that have been open cut to extract coal along with some service buildings and ancillary support structures. The effects of surface mining on the site left much of the area with sparse vegetation and open ground.

In its post reclamation condition, the site will be visually characterized as upland forest and pastureland.

Views of the site from adjacent lands are limited due to topography and vegetation. There are some rural residential units (less than 20 rural residential structure within 1,500 feet of the site). The ranges of rounded hills and valleys immediately surrounding the site provide a visual buffer area for views of the site from these residences. Much of this buffer area supports large strands of evergreen and deciduous trees creating a buffer that blocks views of the site from adjacent lands.

The TransAlta Centralia Operations facility adjacent to the site is currently the most dominant visual feature in the area. The facility contains tall stack emitting a steam plume and mechanical equipment that exhibits complex industrial forms. The TransAlta Centralia Operations facility adjacent to the project site produces a strong industrial statement in the landscape that contrasts with densely forested hills and agricultural/pasture lands adjacent to the site.

## ***IMPACTS***

Visual impacts to adjacent areas from developing the proposal site are expected to be minimal. The project site is not highly visible from public view locations; Big Hanaford Road is the only County road adjacent to the site. The low elevation of Big Hanaford Road and vegetation in the area blocks views of the proposal site from this road except in limited locations.

Construction activities associated with the development of the site into an industrial facility will create some dust that may be visible off site. these impacts are expected to be minor and of relatively short duration

Industrial activities would be a visual contrast from the upland forest and pastureland proposed under the reclamation permit. Some parts of the vegetated reclaimed mining sites would need to be cleared and graded. The initial clearing and grading would eliminate parts of the newly vegetated project site, but it is assumed that approximately 73% (approximately 3,300 acres) of the site will be preserved as indicated in the mining permit including upland forest, pastureland, wetlands, streams, ponds and a lake. Industrial facilities will likely be screened from view from internal and offsite roads by topography and preserved vegetation in most cases

Depending on the specific location and orientation of entrances, structures and parking areas at the project site, it is likely that some portion of industrial activities will have some limited visibility from specific points on surrounding roads.

The area may have an attractive appearance following development as the industrial development sites will be well spaced, screened and set in rolling hills, wetlands forest pasture and lakes.

**MITIGATION MEASURES**

- Protect and preserve vegetation adjacent to the project site boundary wherever possible.
- As a part of the master plan for the project area, design regulations could be formulated to provide a consistent appearance for site landscaping, signing and lighting to provide an attractive "industrial park" image.

# Light and Glare

## ***EXISTING CONDITIONS***

Mining operations at the project site began in 1967 with the construction of infrastructure such as an office, shop, warehouse facilities and mining of coal followed in 1971. Coal mined at the project site was crushed, washed to remove non-coal materials, sampled for quality, and then conveyed from the project site to the existing power plant. Some light and glare emanates from equipment and building lighting on site. Following reclamation, light sources on site would be reduced from current levels.

The main man-made source of light in the project area is lighting associated with the TransAlta Centralia Operations facility. The facility has three smokestacks that are light for aircraft safety. For worker safety the facility is equipped with outdoor lighting on and around the perimeter of the facility. The site is illuminated at night to facilitate 24 hour operations at the plant. The immediate vicinity surrounding the project site is mostly dominated by mining lands, there are some rural residential units (less than 20 rural residential structure within 1,500 feet of the site). The ranges of rounded hills and valleys immediately east of the City of Centralia provide approximately 5 miles of buffer area from light and glare from the site. Much of this buffer area between the site and the City of Centralia supports large strands of evergreen and deciduous trees creating a buffer from light impacts.

## ***IMPACTS***

The project site is adjacent to the TransAlta Centralia Operations facilities, where lighting currently exists. Sources of light and glare related to an industrial park include vehicles, and lighting for buildings, parking areas and storage areas for the industrial users. The increased vehicular traffic may include some additional trips during non-daylight hours, resulting in additional light from headlights.

Industrial facilities will use area lighting for security and visibility. Such lighting is typically mounted on the buildings themselves, and on light poles within parking and storage areas, entry and perimeter locations. These additional light sources are not expected to affect adjacent uses and users. Big Hanaford Road is the only public road adjacent to the site and the proposal site has limited visibility from this facility. The project site is not highly visible from public viewpoint locations.

Construction activities associated with the development of the site into an industrial facility will likely be performed during daytime hours and during the western Washington construction period. Therefore, these temporary construction activities are not likely to cause impacts from light and glare.

## ***POTENTIAL MITIGATION MEASURES***

- Protect and retain vegetation adjacent to the project site perimeter boundary to screen lighting impacts wherever possible.
- As a part of the master plan for the project area, lighting design regulations could be incorporated to mitigate impacts of specific projects as needed.
- Site lighting fixtures could be shielded, recessed, or directed downwards to limit impacts of lighting beyond the project boundary.

## Transportation

This subsection of the environmental review was prepared to evaluate potential impacts resulting from a change in land use at the site to an industrial designation supporting development of large tract capital intensive industries. The regional transportation network in the vicinity of the proposed site includes County and City roads, State routes, Interstate-5 and railroad system. The study area for this analysis focuses on the roadways most likely to be used for trips generated by industrial development. The area was defined through discussions with the Lewis County EDC, review of the Lewis County and City of Centralia Comprehensive Plan, site visits, and review of local traffic data. The area of analysis includes roads within both Lewis County and the City of Centralia (Appendix 3, Transportation Analysis Area).

Part of the analysis area is in a generally rural area of Lewis County. The transportation network in the analysis area in Lewis County previously supported coal mining activities. The analysis area in the City of Centralia includes a major interstate highway, state routes, and City arterials.

Primary components of the transportation system impacted by the proposal located in un-incorporated Lewis County consist of: **(1) Big Hanaford Road and the (2) BNSF Rail Line.** Primary components of the transportation system impacted by the proposal located within the City of Centralia area: **(1) Harrison Avenue, (2) Pearl Street and Tower Avenue (State Route 507), (3) Reynolds Avenue, (4) Main Street, (5) Interstate 5.**

The project site is located about 6 miles east of Interstate-5. The most direct truck route from the project site and I-5 is via Big Hanaford Road to Highway 507 (N. Pearl Street) to Reynolds Avenue to Harrison Avenue (a road distance of about 8.5 miles) to I-5.

There are two interchanges on I-5 near the project site (1) the Grand Mound Interchange/Exit 88 and (2) the Harrison Street Interchange/Exit 82. Highway 99 provides a parallel route to I-5 on the west side between exits 88 and 82. An overpass over I-5, but no interchange is located at 216th Ave SW about halfway between exits 88 and 82, this street connects to Highway 99 on the west side of I-5 but is a dead end on the east side of I-5.

## Existing Conditions

### **LEWIS COUNTY**

The Lewis County Comprehensive Plan, Transportation Element (December, 2001) indicated that *currently all County roadways in unincorporated Lewis County have sufficient capacity for current transportation needs...many of the roadways have daily traffic flows less than half of what could be accommodated.*

### **Big Hanaford Road**

Big Hanaford Road, from the project site to the City of Centralia, has been identified as being a component of the transportation system within un-incorporated Lewis County, impacted by the project actions. Traffic leaving the project site is most likely to head west on Big Hanaford Road towards I-5. Big Hanaford Road is an east/west County collector road that serves as access to the project site from State Route 507. The Lewis County Comprehensive Plan (amended December, 2001), Transportation Element provides traffic counts from 2001 and the projected traffic volumes for 2020. The traffic counts collected pertinent to our investigation of project impacts were collected between 1998 and 2000 at Lewis County Bridge 47, located about a quarter mile west of Halliday Road on Big Hanaford Road.

**Figure 11 – Location of Bridge 47 Traffic Count Collection Point**



The Existing Roadway Level of Service, Table 41 demonstrates the 2001 Level of Service (LOS) on Big Hanaford Road, just west of the project site. The reserve capacity is provided at a LOS D, this is an indication of how much more traffic this segment of road could accommodate and still maintain a LOS D standard.

**Table 41 - Existing Roadway Level of Service**

Roadway Segment	Current (2001) Average Daily Traffic Volume (ADT)	Roadway Capacity at LOS D	Reserve Capacity	Level of Service
Big Hanaford Road at Bridge No. 47	1,670	10,700	9,030	B

Source: Lewis County Comprehensive Plan, Transportation Element. Amended 2001.

Projected traffic volumes and Level of Service for the 2020 are provided in Table 42. Traffic volumes shown do not include the projects traffic impacts.

**Table 42 - Projected Future Roadway Level of Service**

Roadway Segment	Projected 2020 Average Daily Traffic Volume (ADT)	Roadway Capacity at LOS D	Reserve Capacity	Level of Service
Big Hanaford Road at Bridge No. 47	2,150	10,700	8,550	B

Source: Lewis County Comprehensive Plan, Transportation Element. Amended 2001.

## **BNSF Line**

The site is served by a BNSF line located approximately 5 miles east of the project site. TransAlta operates a private spur to the project site. Currently 1.5 trains per day arrive on the spur, carrying coal to facilitate energy generation operations, and are unloaded. The coal trains are unloaded continuously for approximately four hours and block the track during the unloading period. The existing TransAlta rail spur, through its connection to the BNSF line, provides an intertie to nationwide shipping routes via the BNSF and Union Pacific.

## **CITY OF CENTRALIA**

The roadway network serving the City of Centralia consists of a grid network. The City has designated arterial roadways for freight truck routes to commercial and industrial sites from Interstate 5, as indicated in the Centralia Comprehensive Plan, Map 6, *Freight Routes* included in Appendix 3. The west side of Centralia contains fewer roadways than the east side and many of the west side roads are not specific to a grid pattern. West side roads run through a combination of residential, commercial and industrial areas. Most of the local roadways throughout the City are major and minor collectors with undivided two-lane roadways with speed limits of 25 or 30 mph. There are a few minor arterials throughout the city which consist of undivided two-lane roadways with a striped center two way left turn lane.

The area of analysis within the City of Centralia focuses on roadways identified to most likely to be used for trips generated by the project actions. Primary components of the transportation system identified as potentially being impacted by the proposal located within the City of Centralia area:

- Harrison Avenue,
- Pearl Street and Tower Avenue (State Route 507),
- Reynolds Avenue, (4) Main Street, (5) Interstate 5.

## **Harrison Avenue**

Harrison Avenue is a principle arterial east of I-5 freeway and a minor arterial west of I-5. It is the main east/west roadway that ties the freeway to Pearl Street (via Main Street). Harrison is identified as a truck route by the City of Centralia Comprehensive Plan.

Many commercial retail and businesses and industrial sites are accessed from Harrison Avenue. Much of the traffic traveling to and from the City relies on the I-5/Harrison Avenue interchange because it is centrally located to the current retail activity adjacent to the freeway and provides a direct route into Centralia's downtown and major residential areas. Harrison Avenue begins turning north after passing west under I-5; it becomes Highway 99 just north of Fords Prairie and continues north on to Grand Mound.

## **Pearl Street and Tower Avenue (SR 507)**

Pearl Street and Tower Avenue serve Centralia's downtown area and form a one-way road couplet. Pearl Street operates as the southbound facility with Tower Avenue as the northbound roadway. North of 6th Street, these roads combine and Pearl Street operates as a two way facility. South of Main Street, Pearl Street and Tower Avenue are designated as principal arterials. Pearl Street continues north to Downing Road/Big Hanaford Road.

## **Reynolds Road/Galvin Road**

Reynolds Road is an east west minor arterial located north of the Harrison Avenue interchange stretching

from Pearl Street to I-5, where it then changes to Galvin Road and continues to Harrison Avenue (Highway 99) west of I-5. Reynolds Road/Galvin Road is an important connection to Highway 12 which extends west from I-5 at Grand Mound.

**Interstate-5**

I-5 runs north/south through Lewis County, and through Centralia and Chehalis, and the community of Grand Mound. I-5 serves as the primary route for commercial/industrial traffic entering or exiting the city of Centralia and Chehalis. Two interchanges off of I-5 have been identified as potentially being impacted by the proposed actions, Harrison Avenue and Grand Mound.

**Traffic Control**

All of the principal arterials in Centralia are located in the southeast area of the City which is also the Central Business District downtown area. These principal arterials allow for greater traffic volumes and freight travel for long distances through the city normally greater than two miles.

Traffic control is critical for traffic flow and safety. Most intersections in the city area stop controlled. Segments of the transportation network that exceed established threshold of equal to or greater than 10 accidents per mile per year were documented in the Centralia Comprehensive Plan. The following intersections are within the area identified as being affected by the proposal:

- Harrison Avenue (I-5 to Main Street)
- Main Street (Harrison Avenue to Tower Avenue)

These segments carry relative high volumes and have numerous closely spaced stop controlled intersections and accesses which may contribute to the number of accidents. Intersections that exceed an accident threshold of equal to or greater than five accidents per year are:

- Harrison Avenue and I-5 NB Ramps
- Harrison Avenue and Belmont Street
- Main Street and Washington

The Transportation Element of the Centralia Comprehensive Plan (June 2007) included an operational analysis of existing conditions of *intersections*. Table 43 provides data for operations at intersections likely to be affected by the proposal. Adopted minimum operational standards are LOS D, as shown in Table 43, West 1<sup>st</sup> Street and Harrison was the only intersection with deficiencies likely to be affected by the proposal that does not currently operate at or above adopted level of service standards. Exceeding adopted standards occurs during PM peak hours.

**Table 43 - Intersection PM Peak Hour Traffic Operations Summary (2006)**

Intersection	Jurisdiction	Adopted LOS Standard	Signalized/Un-Signalized	Existing	
				LOS	Delay
Harrison Avenue & Reynolds Avenue	Centralia	D	Signalized	B	13
Reynolds Avenue & Pearl Street	Lewis County/ Centralia	D	Signalized	C	32

Intersection	Jurisdiction	Adopted LOS Standard	Signalized/Un-Signalized	Existing	
				LOS	Delay
Harrison Avenue & I-5 SB Ramps	WSDOT/Centralia	D	Signalized	C	32
Harrison Avenue & I-5 NB Ramps	WSDOT/Centralia	D	Signalized	C	29
Main Street & Pearl Street	Lewis County/ Centralia	D	Signalized	C	28
Main Street & Tower Avenue	Lewis County/ Centralia	D	Signalized	C	34
Cherry Street & Pearl Street	Lewis County	D	Signalized	B	12
Cherry Street & Tower Street	Lewis County	D	Signalized	D	43
W. 1 <sup>st</sup> Street & Harrison Avenue	Centralia	D	Unsignalized	<b>F</b>	<b>132</b>

Source: City of Centralia Comprehensive Plan, Transportation Element. 2007.

The Transportation Element of the Centralia Comprehensive Plan (June 2007) includes analysis of roadway operations, assessing PM peak hour volume on a roadway versus the roadway's hourly capacity (volume/capacity). Based on the information from the Comprehensive Plan, all roads identified to be affected by the proposal are currently operating at a Level of Service D or better.

**Table 44 - PM Peak Hour Traffic Operations Summary Intersections Federally Classified(2006)**

Roadway	Cross Street	Cross Street	2006 PM Peak Volume	Capacity	V/C Ratio	LOS
Harrison Ave	City Limits	Reynolds Road	865	1000	0.87	D
Harrison Ave	Reynolds Road	Caveness Road	930	1310	0.71	D
Harrison Ave	Caveness Road	Main Street	1515	2640	0.57	D
Main St	Harrison Avenue	Tower Avenue	645	1120	0.58	D
Reynolds Rd	I-5	Pearl Street	645	1120	0.58	D
Pearl St	Chestnut Street	West 6 <sup>th</sup> Street	690	1850	0.37	C or better
Pearl St	West 6 <sup>th</sup> Street	City Limits	790	1120	0.70	D
West 1 <sup>st</sup> St	Harrison Avenue	Tower Avenue	260	1120	0.23	C or better
West 6 <sup>th</sup> St	Pearl Street	Tower Avenue	65	1120	0.06	C or better

Source: City of Centralia Comprehensive Plan, Transportation Element. 2007.

Roadways exhibited in Table 44 were incorporated, from Centralia’s Comprehensive Plan, due to their direct correlation with the transportation network associated with the project. All roadways exhibited in Table 44 were operating at a LOS D or better.

**Interstate-5**

Interstate-5 is the nearest limited access highway to the project site. Interstate highway is the highest roadway classification and serves large volumes of traffic and freight travel. I-5 is a North American Free Trade Agreement (NAFTA) route; it is the primary north-south interstate roadway facility for the pacific coast states (Washington, Oregon, and California). WSDOT data indicates an Average Daily Traffic Volume (ADT) of 62,000 vehicles at milepost 81.21 just north of the SR 507/Mellen Street ramps in 2005. The percentage of trucks accounted for in relation to total vehicles at this data collection point was 19 percent in 2005.<sup>12</sup>

Two diamond interchanges at Harrison Avenue and Mellen Street link I-5 with the City of Centralia street network. The diamond interchange at Harrison is controlled with a traffic signal where the ramp terminals intersect with the City’s arterial network. The City’s Comprehensive Plan indicates that this interchange operates at a Level of Service D at peak travel times. The other interchange that is within the area of analysis is located in Thurston County at Grand Mound (exit 88). The interchange at Grand Mound is not controlled with a traffic signal.

WSDOT has plans to replace the interchange at Grand Mound; the goal of the project is to improve the mobility and safety of the I-5/US 12 interchange. Traffic signals will be installed at both ramp intersections resulting in a typical “diamond” interchange configuration. The project will realign and lengthen the on/off ramps providing more room for vehicles to safely enter and exit the highway and the signals will reduce required driver sight distance.

The 2008 WSDOT Annual Traffic Report indicates that the *Annual Average Day* traffic volume on I-5 (data collected on permanent traffic recorders on I-5 just north of the Lewis County boundary and in south Chehalis) is 58,000 with 29,035 trips being northbound and 29,125 trips being southbound. The Transportation element of the Centralia Comprehensive Plan indentified safety deficiencies on the Harrison Avenue and I-5 northbound ramps.

**Table 45 - I-5 Safety Deficiency**

Intersection	Accidents by Year				
	2001	2002	2003	2004	2005
Harrison Avenue and I-5 Northbound Ramps	4	2	7	8	7

<sup>12</sup> Centralia Comprehensive Plan, Transportation Element, Attachement 2, *Existing Conditions Memorandum*, pg 3. June 2007.

The State Legislature has approved \$197 million in funding to complete a project on I-5 from Mellen Street (south Centralia) to Grand Mound (Thurston County). WSDOT is currently working on environmental permitting and project design. The project will improve a total of seven miles of I-5 between Mellen Street (Exit 81) in Lewis County and just south of the Grand Mound interchange (Exit 88) in Thurston County. A collector distributor road (CD) will be constructed from Mellen Street to Harrison Avenue (Exit 82). The Mellen Street and Harrison Avenue interchanges will be improved. Additionally, the I-5 corridor will be widened from two lanes in each direction to three lanes in each direction from Harrison Avenue to the Grand Mound Interchange.

WSDOT is planning to construct the I-5 Mellen Street to Grand Mound improvements in two separate stages: (1) Blakeslee Junction to Grand Mound and (2) Mellen Street to Blakeslee Junction.

#### Blakeslee Junction (Reynolds Avenue) to Grand Mound

This project will widen 4 miles of I-5 from two lanes to three lanes in each direction between the Blakeslee railroad junction in Lewis County (milepost 83.5) and just south of the Grand Mound interchange (Exit 88) in Thurston County. Construction of this project has been rescheduled for 2010 to avoid overlap between this project and the project currently underway immediately north, the widening of I-5 from Grand Mound to Maytown. WSDOT is currently working on the design, environmental permitting, and right-of-way acquisition for this project. Project benefits identified by WSDOT include:

- Safety - as traffic levels increase on this section of I-5, safety problems are expected to grow. Widening this component of the interstate will help address these potential problems.
- Mobility - this project will increase roadway capacity and traffic flow by widening approximately four miles of I-5 between the Blakeslee Railroad Junction in Lewis County and just south of the Grand Mound Interchange (Exit 88) in Thurston County.
- Economic - this project will help increase economic development in this area by improving freight mobility through Lewis and south Thurston County.

Construction is scheduled to be completed in 2012.

#### Blakeslee Junction (Reynolds Avenue) to Mellen Street

WSDOT is moving forward with the project designs for further I-5 improvements from the Blakeslee Junction to Mellen Street. Improvements include a collector distribution lane between Mellen Street (Exit 81) and Harrison Avenue (Exit 82) interchanges; these are planned to improve safety by eliminating the existing traffic merging conditions and by keeping local traffic off mainline I-5. This project will construct a new bridge over I-5 south of the Mellen Street and will connect to Mellen Street interchange and collector distributor lanes by using frontage roads. The new bridge will connect to the existing Mellen Street Interchange and CD lanes using Airport Road and Ellsberry Street. This split interchange configuration will allow traffic to circulate with one direction flow. Additionally, as part of this project, I-5 will be widened and re-aligned at the Blakeslee Junction curve. Construction is scheduled to be completed in 2014. Project benefits identified by WSDOT include:

- Safety - this project will increase roadway capacity and improve traffic flow through Lewis County by providing CD lanes between the Mellen Street and Harrison Avenue interchanges.
- Mobility - as traffic levels increase on this section of I-5, safety problems are expected to grow. CD lanes will reduce collisions by eliminating weave conditions between the Mellen Street and Harrison Avenue interchanges.

- Economic - this project will help increase economic development in this area by improving freight mobility through Lewis and south Thurston County.

### North County Interchange

WSDOT is in the early stages of the process for determining feasibility of an interchange off Interstate 5 that would among other things, facilitate traffic to and from the project site. The study is currently underway, no information is available on when design would be completed and constructed or how the project would be funded. The first phase of the report is anticipated to be completed in August of 2009 with a recommendation to move forward with a further analysis of the feasibility of the interchange. The North County Interchange would be located south of the Grand Mound Interchange and north of the Harrison Avenue Interchange. The interchange could be designed so that a road could be developed that would connect directly to Big Hanaford Road. No funds for the design or construction of this have been identified.

### **Rail Network**

The Puget Sound and Pacific (RS & P) and the Curtis, Melburn, and Eastern (CM + E) rail lines serve industrial development in Lewis County. The Burlington Northern and Santa Fe Railway and the Union Pacific operated on the main north south rail line in Lewis County. This line provides both freight and passenger service. AMTRAK, which operates along this BNSF owned rail line, serves the Centralia/Chehalis area with a depot in downtown Centralia. Currently three passenger trains are scheduled in each direction each day on this line.

Freight trains switch cars and transfer loads at Blakeslee Junction in Centralia, an intermodal facility. The BNSF line crosses streets at three grade separated crossings: East 6<sup>th</sup> Street, North Pearl Ave, and North Tower Ave. The Tacoma Rail's Mountain Division line interconnects and interchanges rail cars at a switchyard near the intersection of East Maple Street and North Gold Street. Transferring loads and interconnecting freight cars causes congestion and delays among freight cars. The Transportation Element of the Centralia Comprehensive Plan states that traffic on surrounding surface streets experience delays up to fifteen minutes due to freight activity at the Blakeslee Junction.

No data has indicated traffic or freight congestion impacts as a result of operations on the BNSF rail lines. There is a spur located off of the BNSF rail lines adjacent To Big Hanaford Road that serves the TransAlta Centralia Operations.

### **Transit Facilities**

The project site is located in rural Lewis County, there are no dedicated pedestrian or bicycle facilities located adjacent to or on the project site although use of road shoulders for these purposes is expected. Twin Transit is the public transportation system in the cities of Centralia and Chehalis in Lewis County, operating bus routes between and around these Cities and the County. Twin Transit has two types of service standards: (1) Ridership of ten passengers per hour, per route is anticipated, and (2) Half-hourly

headways are scheduled for core service areas during peak hours on most routes<sup>13</sup>.

There are two bus stops in eastern Centralia that have been identified as being the closest two stops near the project site: (1) the Waunch Prairie Stop, near Downing Avenue and Pearl Street and (2) the Logan Area Stop, near the Logan Community Park and Vienna and Logan Street. The two stops have service every hour, beginning at 6:30 AM to 7:30 PM. These transit stops are several miles from the project site.

## Impacts

Data exhibited in Table 46 comes from the 7<sup>th</sup> edition of the Institute of Transportation Engineers (ITE) Manual, demonstrates a low and high range estimate of estimated trip ends per weekday generated by workers at a (*general*) *Heavy Industry* site (sample for large industrial users with 500 to 4,000 employees).

**Table 46 – Average Trips, ITE Trip Generation**

Range	Estimated Trip Ends per Weekday
Low	0.75
High	1.81

Source: ITE Trip Generation Manual, 7<sup>th</sup> Edition

The 2000 US Census provides information on the number of employees in Lewis County that carpool to work, this data is presented in Table 47.

**Table 47 – Lewis County Carpooling**

	Lewis County Workers	Percent of Lewis County Workers Carpooling	Centralia Workers	Percent of Centralia Workers Carpooling	Chehalis Workers	Percent of Chehalis Workers Carpooling
Workers* Total	26,390	N/A	5,560	N/A	2,752	N/A
Workers Carpooling	3,252	12%	983	18%	289	11%

\* Workers 16 years and older. Source: 2000 US Census

There were a significant number of workers carpooling to work in Lewis County, with 12% of the total workforce in the County.

<sup>13</sup> Lewis County. Comprehensive Plan. Approved Plan, June 1, 1999, amended April 4, 200. Transportation Element.

Human Resource data provided by TransAlta Centralia Operations indicates that in 2006 during peak mine employment, there were approximately 912 employees working at the TransAlta Centralia Operations. Two of the largest cohorts of employees were those traveling from the area in and around Centralia (24%) and Chehalis (26%), with the third largest group traveling from the Rochester area (8%) to the facility (933 Big Hanaford Rd, Lewis County, WA).

**Table 48 – 2006 Distribution of TransAlta Centralia Operations Employees**

Closest Urbanized Area to Employee Zip Code	2006 TransAlta Employees	Percent of Total Employees Traveling from Area	Estimated Trips per Weekday - <u>Low</u> Range (0.75)	Estimated Trips per Weekday - <u>High</u> Range (1.81)
Centralia	217	23.79%	163	393
Chehalis	239	26.21%	179	433
Rochester	77	8.44%	58	139
Tenino	63	6.91%	47	114
Olympia	54	5.92%	41	98
Onalaska	53	5.81%	40	96
Winlock	40	4.39%	30	72
Other	169	18.53%	127	306
<b>Total</b>	<b>912</b>	<b>100.00</b>	<b>684</b>	<b>1,651</b>

Source: TransAlta Centralia Operations, Human Resources

Suspension of TransAlta mining operations from 2006 to 2009 on and adjacent to the project site has resulted in over 600 jobs being eliminated. The 2009 employment data from the TransAlta Centralia Operations indicates the two largest percentages of employees are presently traveling from Chehalis (27%) and Centralia (20%), with the third largest group traveling from the Olympia area (11%).

**Table 49 – 2009 Distribution of TransAlta Centralia Operations Employees**

Closest Urbanized Area to Employee Zip Code	2009 TransAlta Employees	Percent	Estimated Trip Ends per Weekday - <u>Low</u> Range (0.75)	Estimated Trip Ends per Weekday - <u>High</u> Range (1.81)
Chehalis	83	27.21%	62.25	150.23
Centralia	61	20.00%	8	110.41
Olympia	35	11.48%	26.25	63.35
Rochester	21	6.89%	9	38.01
Winlock	17	5.57%	12.75	30.77
Tenino	17	5.57%	10	30.77
Onalaska	9	2.95%	6.75	16.29
Lacey	9	2.95%	11	16.29
Toledo	8	2.62%	6	14.48
Napavine	6	1.97%	12	10.86
Mossyrock	5	1.64%	3.75	9.05
Lewis County	5	1.64%	13	9.05
Yelm	4	1.31%	3	7.24
Rainier	4	1.31%	14	7.24
Grays Harbor	3	0.98%	2.25	5.43
Tacoma	2	0.66%	15	3.62
McKenna	2	0.66%	1.5	3.62
Longview	2	0.66%	16	3.62
Harmony	2	0.66%	1.5	3.62
Galvin	2	0.66%	17	3.62
South Jordon (UT)	1	0.33%	0.75	1.81
Shelton	1	0.33%	18	1.81
Renton	1	0.33%	0.75	1.81
Ranier (OR)	1	0.33%	19	1.81
Prosser	1	0.33%	0.75	1.81
Gig Harbor	1	0.33%	20	1.81
Dayton	1	0.33%	0.75	1.81
Chimacum	1	0.33%	21	1.81
<b>TOTAL</b>	<b>305</b>	<b>100.00%</b>	<b>228.75</b>	<b>552.05</b>

Source: TransAlta Centralia Operations, Human Resources

**Potential Trips Added to Existing Transportation Network**

The development of the Industrial Park at the project site is anticipated to happen in phases correlating with reclamation activities, with a full build out anticipated in 15 to 25 years. Improvements to the infrastructure system for the industrial park will be implemented concurrently with the development of the industrial sites. As indicated in discussions above, several projects are currently underway and should be completed prior to build out of the site.

**Table 50 – Average Trip Ends per Development Areas at the Industrial Park**

Development	Assumed Estimated Lot Size (acres)	2.2 Average Number of Employees per Acre	0.75 Low Range of Employees Trip Ends	1.81 High Range of Employees Trip Ends
1	140	308	231	558
2	140	308	231	558
3	140	308	231	558
4	140	308	231	558
5	140	308	231	558
6	140	308	231	558
7	140	308	231	558
<b>TOTAL:</b>	<b>980</b>	<b>2,156</b>	<b>1,617</b>	<b>3,906</b>

- The 2006 low range of trips generated from employees at the project site during mining operations was 684 weekday trips and the high range is estimated to have generated 1,651 trips.
- The 2009 low range of trips generated from employees at the project site during mining operations was 229 weekday trips and the high range is estimated to have generated 552 trips.
- In 2009 there were approximately 455 (low range) to 1,099 (high range) less trips generated by mining operation employees at the project site than in 2006.

It is assumed that, upon completion of reclamation activities at the project site, the lands contained within the project site will yield seven development sites with an average 140 acres per site.

- Total estimated amount of trips generated at the project site (assuming seven 140 acres sites):
  - Low Range = 1,617 weekday trips
  - High Range = weekday 3,906 trips

TransAlta’s employment records indicate that from 1999 to the 2009, approximately 600 positions have been eliminated at the project site due to the discontinuation of mining operations.

- The 600 discontinued positions associated with the TransAlta mining operations are estimated to have generated approximately 450 to 1,086 trips.
- The difference in employees between 2006 and 2009 is equal to approximately the number of employees forecasted to be generated at two 140 acre development areas at the project site.

**Trip Distribution (travel to/from/on Interstate-5)**

The 2009 employment data provided by TransAlta demonstrates the residence or employees by zip code of where trips to the project site were previously generated when mining was the industry on the site. Using the previous employer on the project site as an indicator of the trips that will be generated on I-5, we can conclude that the amount could be relatively insignificant compared to the capacity and current traffic carried by the interstate.

In 2009, 47.21% of employees (144 of 305) working at the TransAlta mining operations were from the

Centralia and Chehalis area; the data (zip codes of former employees) does not allow us to pin point the exact point of departure to the site. Both Centralia and Chehalis are more densely urbanized on the east side of I-5, thus we can assume that large cohort of the trips generated from employees at Centralia and Chehalis do not use I-5 to get to the project site. The third largest cohort of employees was generated from Olympia (11.48%), there were 35 of 305 employees traveling from Olympia to the project site. The impacts to I-5 will be significantly less than impacts to local streets.

**Rail Traffic**

Any new rail facilities constructed at the site would be adjacent to existing rail spurs operated by the TransAlta Centralia Operations. The Federal Railroad Administration enforces rail safety regulations, and improvements will be required to meet or exceed minimum safety standards. TransAlta currently receives 1.5 trains per day, assuming that three of the seven sites were rail intensive users, rail traffic might increase by 4.5 trains per day.

**Transit Facilities**

The 2000 US Census indicated that less than 1% of the work force in Lewis County uses public transportation as their means of travel to work.

**Table 51 – Public Transit Usage**

	Lewis County	Lewis County Percent	Centralia	Centralia Percent	Chehalis	Chehalis Percent
<b>Work Force*</b>	26,390	N/A	5,560	N/A	2752	N/A
<b>Public Transportation Riders</b>	89	0.34%	47	0.85%	5	0.18%

\* Workforce 16 years and older. Source: 2000 US Census

It is not likely that development at the project site will have an impact on current public transit facilities, but there could be, at some time, an increased demand to extend service to the project site.

**Mitigation**

The impacts identified to the system indicate that some measures may be used to mitigate impacts to the transportation network as a result of development at the project site. The build out of the site will take at least 15 to 25 years during which time many changes to the road systems will occur. There are several transportation projects underway that can dramatically affect the overall operations of the components of the transportation network in the analysis area.

**Table 52 – Public Projects with Potential to Improve Conditions in Area of Analysis**

Project	Overview	Transportation Component in Area of Analysis Effected	Year Estimated to be Complete
I-5 Grand Mound Replace Interchange - WSDOT Project	<p>Both loop ramps will be eliminated. Traffic signals will be installed at both ramp intersections resulting in a typical "diamond" interchange configuration.</p> <p>On the east side of the interchange, the two existing exits from northbound I-5 will be consolidated to one exit point. The alignment of the SR roadway across the interchange will be shifted to the north.</p>	Grand Mound Interchange	Project estimated to begin in <b>2010</b> , no information on completion date has been published.
I-5 Blakeslee Junction to Grand Mound - WSDOT Project	WSDOT will widen four miles of I-5 from two lanes to three lanes in each direction between the Blakeslee Railroad Junction in Lewis County (milepost 83.5) and just south of the Grand Mound interchange (Exit 88) in Thurston County.	Interstate 5	Construction is scheduled for completion in <b>2011</b>
I-5 Mellen Street to Blakeslee Junction - WSDOT Project	<p>WSDOT will construct Collector Distributor (CD) lanes between Mellen St (Exit 81) and Harrison Ave (Exit 82) interchanges.</p> <p>The CD lanes will improve safety by eliminating existing traffic merging conditions between Mellen St and Harrison Ave interchanges and preserves mobility by keeping local traffic off mainline I-5.</p> <p>This project will construct a new bridge over I-5, south of the Mellen Street and connect to Mellen St interchange and CD lanes by using frontage roads.</p>	Interstate 5 and Harrison Ave Interchange	Construction is scheduled for completion in <b>2014</b>
I-5 Koonts Rd to Harrison Ave Paving - WSDOT Project	<p>Asphalt pavement on this section of I-5 is deteriorating due to age and normal wear.</p> <p>Resurfacing the interstate will repair ruts and cracks in existing pavement and extend the life of the roadway, in addition to providing a smoother and safer ride for motorists.</p> <p>The project will also strengthen and preserve road surface, allowing I-5 to continue handling heavy commuter and freight traffic.</p>	I-5: from Harrison Ave to Chamber Way (Napavine)	Work should be complete in <b>Fall of 2009</b>

Project	Overview	Transportation Component in Area of Analysis Effected	Year Estimated to be Complete
<p>Rail - Tacoma Rail &amp; Puget Sound &amp; Pacific RR/Centralia Reconfigure Rail -WSDOT Project</p>	<p>The project is broken up into 5 phases. Once Phase 1A and 1B are completed, new connections will reduce congestion for both rail and automobile traffic in the area.</p> <p>Agreed upon option makes upgrades to existing route used by trains carrying grain for Port of Grays Harbor. In addition to making speed improvements at Centralia, it provides for connection to Tacoma Rail at Blakeslee Junction.</p> <p>Phase 2 will add additional rail line on BNSF Railway network at Centralia.</p> <p>Phase 3 will add additional storage capacity to Puget Sound &amp; Pacific line at Blakeslee Junction.</p> <p>Phase 4 will add storage track on Puget Sound &amp; Pacific line at Hoquim.</p> <p>Phase 5 will make new connection between Puget Sound &amp; Pacific and Tacoma Rail at Grand Mound.</p> <p>Only Phase 1A &amp; 1B are partially funded.</p>	<p>Rail Lines</p>	<p>Construction start not yet planned.</p> <p>Project underfunded and not likely to be funded until 2019<sup>14</sup></p>
<p>Harrison to W. Reynolds Connection (Eckerson Road improvements) - City of Centralia TIP Project</p>	<p>This will be a connector clearing both sets of NW/SE railroad tracks. Preliminary planning indicates a bridge with a span of approximately 325 feet will have an embankment on sides of elevation and abutment walls on wither side of tracks. A new signal is planned where the alignment meets W. Reynolds Ave.</p>	<p>Harrison Ave Interchange</p>	<p>Project is a part of the City of Centralia 6 Year Transportation Improvement Program (TIP).</p> <p>Construction start not yet planned. No estimated completion date has been published.</p>

<sup>14</sup> Telephone conversation with Andrew Wood, WSDOT, Deputy Rail and Marine Director. July 9, 2009

Project	Overview	Transportation Component in Area of Analysis Effected	Year Estimated to be Complete
W. 1 <sup>st</sup> St and Harrison Ave.	New Signal.	Harrison Ave and W. 1 <sup>st</sup> Street	<p>Recommended improvement in City of Centralia Comp. Plan. Construction start not yet planned.</p> <p>No estimated completion date has been published.</p>

Data from the Lewis County and Centralia Comprehensive Plans indicates there is existing capacity on the transportation network. The data from these plans was collected at time when the TransAlta mining facility was in operation with 900 employees, from 2006 to the present, there have been over 600 jobs eliminated.

Assuming 2.2 employees an acre at a capital intensive industry developed at the project site, we can assume that there may be existing capacity on the transportation network for the development of two tenants at the project site (2.2 employees per acre x 140 acre development area = 308). As part of individual tenant's project review, specific transportation impacts may be reviewed, and mitigation needed to facilitate the development identified at that time.

## **Avoid, Minimize and Mitigate**

The overall approach to mitigating impacts from the proposal taken in this analysis is (1) try to avoid causing an impact on the transportation system, (2) minimize impacts on the system, and (3) mitigate unavoidable impacts. Mitigation measures have been identified that could be implemented as needed in the future to reduce impacts generated by industrial developments at the project site.

### ***TRANSPORTATION SYSTEM IMPROVEMENTS***

The following options were investigated to ensure that there are feasible improvements that can be made to the transportation network if a potential industry at the project site is found to have an impact on the network beyond its current capacity. Measures to avoid, minimize, and mitigate impacts to the transportation network caused by traffic assumed to occur with development of capital intensive industries at the project site are documented. The options discussed are a result of the environmental analysis performed in Chapter 2-1. Analysis of the transportation network and the potential impacts was performed using existing documentation of the capacity in Lewis County and Centralia. The potential improvements are discussed as, (1) congestion management practices/non-structural improvements, and (2) structural improvements.

Based upon the City of Centralia and Lewis County goals and objectives as documented in their Comprehensive Plan, the goals of the transportation management and improvements indentified in this report are to:

- Provide alternatives to using the Harrison Interchange (Exit 82).
- Avoid sending traffic through downtown Centralia.
- Facilitate the use of parallel routes (north bound and south bound) between Exit 88 and 82 on both the east and west side of Interstate-5.
- Avoid adding traffic to areas stressed with capacity at peak travel times.
- Reduce single occupancy vehicles (SOV) traveling to the site.

The approach to planning for transportation improvements was to avoid impacting the network so that new infrastructure would not be required to facilitate transportation operations. The goals of management options are to minimize adding traffic to congested areas of the transportation network. Improvements planned are to address areas in the network that have been identified as congested, but not performing below the acceptable level of service at peak travel times.

### ***Congestion Management Practices/Non-Structural Improvements***

Congestion is condition that is characterized by slower speeds, longer trip times, and increased queuing;

when traffic demand is great enough that the interaction between vehicles slows the speed of the traffic stream, congestion is incurred. As demand approaches capacity of a road (or of the intersections along the road) traffic congestion sets in. Several basic strategies may be combined to reduce traffic congestion. Congestion management is an approach that attempts to provide strategic alternatives to constructing more roads, by encouraging use of alternative routes through promotion, subsidies, or restrictions.

With few physical improvements to the existing transportation network, it may be feasible to apply some congestion management practices to mitigate the impacts of development at the project site during the early phases of development. Past practices have often relied on adding road capacity to address traffic congestion. However, an alternative to an attempt to building more roads to solve peak hour congestion is to improve the efficiency of the existing transportation system.

It is documented in Appendix E: Transportation Assessment of Site "A" of the Lewis County Prime Industrial Lands Study (February 1999) that at one time the Centralia Mining Company employed over 1,000 employees; in 1999 at the time of the study, it was documented that there were approximately 600 employees at the site. There are now approximately 300 employees at the TransAlta Centralia Operations facility.

The first capital intensive development at the project site may not need to make improvements to the exiting transportation system. The forecast of the amount of employees generated at an average lot size of 140 acres is approximately 308 employees. There have been approximately 600 positions cut at the TransAlta Centralia Operations facility. The 600 jobs that were cut are estimated to have generated:

- 450 trips a day (low range estimate)
- 1,086 trips a day.(high range estimate)
- The assumption is that there will be 2.2 employees per acre at an industrial development at the park; the average lot size at the project site is anticipated to be 140 acres (minimum lot size is 100 acres). Therefore, it is assumed that there will be approximately 308 employees at the first development.
  - The low range of trips generated by these 308 employees is 231.
  - The high range of trips generated by these 308 employees is 558.

If at the time development review for an individual tenant at the park, it is found that the traffic generated by activities at the site will impact an intersection in Lewis County or the City of Centralia beyond an acceptable level of service per the Comprehensive Plans, it may be feasible for tenants and the City and County to agree on congestion management measures that would avoid impacting areas beyond an acceptable level of service at peak operating times.

Possible measures identified in this report:

#### *Strategic Shift Stacking*

To avoid congestion at peak travel times in the City of Centralia, at the time of individual tenants environmental review, it could be feasible for agreements to be made with the City so that employees' shifts at the project site are stacked to arrange travel time on existing transportation infrastructure so that impacts are found to be below the threshold for the need for physical improvements.

Alternative work hours at the Industrial Park can reduce trip demand on roadways by shifting work start and stop times to avoid peak roadway hours. From looking at previous employment data at and

adjacent to the project site, it is anticipated that almost ½ of all the jobs at the site will be held by residents in and around Centralia and Chehalis, generating local trips.

### *Carpooling*

With almost 18% of Centralia residents reporting they carpoled to work, it may be more feasible for private industries to implement carpooling incentive programs as a means to mitigate impacts of employees on the existing transportation network.

- Carpool incentive programs may incorporate a variety of means to encourage employees to carpool. Possible incentives include reduced cost or free parking, preferred parking, or reward programs (such as prize drawings).
- Employers can help employees form carpools through rideshare matching. Rideshare matching helps potential carpoolers locate others nearby with similar schedules. Regional rideshare organizations in most areas allow interested employees to register directly for no cost. Employers can direct their employees to these free services.
- Employee benefits from carpooling include cost-sharing, less wear and tear on vehicles, time savings in regions with HOV lanes, and the ability to talk, eat, sleep, or read while commuting. The primary employer advantage is the need for fewer parking spaces; other advantages include less employee stress and improved productivity.

### *Monitoring*

Monitor complaints of any isolated stop sign controlled intersections in the County, if the community begins to experience excessive delay of congestion, it may be appropriate to construct turn lanes or to improve traffic control. Improvements such as all way stops or constructing a traffic signal system are types of improvements that are based on site specific needs and are not measures of overall function of the transportation system. The implementation of improvements can be address at the time of determination of impacts of specific tenants. As a part of monitoring process, analyze capacity of improvements to the traffic signalization to reduce congestion.

### *Alternative Freight and Commuter Routes*

Road space rationing is a means to avoid activities at the site from impacting the transportation network, restrictions can be placed upon roads as to prevent certain types of vehicles (such as freight) from driving on roads under circumstances where the impact would effect the Level of Service beyond the adopted Level of Service D.

Using roads that are already designated as freight routes (per the City of Centralia Comprehensive Plan), north bound freight leaving the project and freight coming to the project site from the north at peak travel times could be required to utilize the following route, avoiding designated areas in the City where peak hour capacity has been documented: (1) Big Hanaford to Downing Road, (2) Downing Road to Pearl Street, (3) Pearl Street to Reynolds Road, (4) Reynolds Road to Harrison Avenue/Old Hwy 99, (5) Grand Mound Exit to I-5.

Freight traffic coming from the south will likely use the (1) Harrison Street Exit, then travel north on Harrison to Reynolds, (2) Reynolds to Peal Street, (3) Pearl to Downing, (4) Downing to Big Hanford, (5) Big Hanaford to project site. The capacity of this route and mobility of those traveling to and from the south will be improved upon completion of the Eckerson Road extension to Reynolds Road, currently on

the City of Centralia six year Transportation Improvement Program. Depending upon transportation operations of industrial tenants at the project site, at peak hours Harrison Street could reach capacity without infrastructure improvements being made.

### ***Structural Alternatives***

#### ***Eckerson Road to Reynolds Avenue Connection***

This alternative involves constructing a quarter mile extension of Eckerson Road to Reynolds Avenue allowing truck traffic coming from the project site to access I-5 without having to travel on the west side of I-5 in the City's retail corridor.

Traffic going to the project site from the south exiting on Harrison would be able to use this road, allowing freight to avoid Harrison Avenue. This would not mitigate impacts of trucks traveling from the north to an industrial park, as they would still be required to exit on Harrison and travel through the congested commercial area on the west side of I-5.

With this improvement in place, trucks could travel from the project site along Big Hanaford Road then south on Pearl Street, then west on Reynolds where they would then go south on Eckerson Road to Harrison Avenue where they can then travel north west to the I-5 north or south bound on-ramp. The development of Eckerson Road will require coordination efforts with the BNSF/UP rail.

The development of Eckerson Road to Reynolds Avenue is a project in the City of Centralia's capital improvement program. The City of Centralia's Comprehensive Plan, June 2007, Transportation Element, Attachment 2, *Existing Conditions Memorandum* provides a Cost Estimate Summary of the range of cost for the Eckerson Road to Reynolds Avenue at a conceptual design level, the range provided indicates this road extension will cost in a range from 11.4 million to 20.2 million dollars (6.22.2007).

#### ***Smith and Blair Road Connection***

This alternative involves developing a 1 mile section of road located adjacent to I-5 on the east. By connecting this one mile road, traffic traveling on I-5 from the north to the project site can exit at Grand Mound and travel south to the 216<sup>th</sup> Street overpass that connects to Hobson Road/Smith Road S. If the 1 mile connection was developed, traffic could then travel south to Blair Road and on to Reynolds Road then to the project site. This connection would allow traffic traveling south on I-5 to circumvent the commercial area adjacent to I-5. The one mile road would require extensive earth work and would require work in a flood plain.

#### ***North County Interchange***

As indicated in the previous discussion above, the feasibility study for the North County Interchange is currently underway; no information is available on when design would be completed and constructed or how the project would be funded. While the impacts of the North County Interchange on the existing transportation network associated with the project site have not been fully analyzed, they are anticipated to have a dramatic positive impact on the mobility of both freight and passenger vehicles on the existing transportation network and improve the capacity of components of the existing network.

## **Public Services**

### ***EXISTING CONDITIONS: POLICE & FIRE***

#### ***Police Protection***

Police protection is provided by the Lewis County Sheriff's Office and is composed of an Investigations Division and a Patrol Division. The Investigations Division is responsible for conducting complex and major criminal investigations. The Patrol Division of the Lewis County Sheriffs Office is a uniformed division with personnel responding to over 16,000 calls for service a year. Deputies patrol approximately 2435 square miles 24 hours a day. The Patrol Division is comprised of approximately 30 uniformed personnel. Deputies are responsible for responding to emergencies, investigating crimes, conducting traffic enforcement, investigating motor vehicle collisions, and other duties. Specialty areas of the Patrol Division include Commercial Vehicle Enforcement, Boating Enforcement, Aviation Unit, Sheriff's Emergency Response Team, and Community Impact Team.

The Sheriff's Office, including the Jail, is funded through the County's general budget with expenditures for 2009 projected to be \$13,475,188.00. The Lewis County Sheriff's Office employs a total of 124 people which includes 43 full time law enforcement officers. Enforcement personnel live throughout the County and give active coverage for 24 hours a day, 7 days a week.

#### ***Fire Protection***

Fire and emergency services are provided to the project site by the Riverside Fire Authority. The Riverside Fire Authority (RFA) was officially established on January 1, 2008. A Regional Fire Protection Services Authority is a municipal corporation consisting of two or more adjacent fire protection districts or municipal jurisdictions, created by a vote of the people.

The RFA joins the existing resources from the Centralia Fire Department and Lewis County Fire District 12 to provide fire and emergency medical services to the city of Centralia and the surrounding neighborhoods (including the project site). Riverside Fire Authority provides professional services to approximately 26,000 citizens residing throughout the 184 square miles of Centralia, Hanaford Valley, Seminary Hill, Cooks Hill, Lincoln Creek Valley, Independence Valley and Garrard Creek.

The Riverside Fire Authority is comprised of approximately 28 full time staff and approximately 48 community-based volunteer personnel.

The Riverside Fire Authority provides the fire, rescue and EMS services:

- Fire Protection and Suppression
- Emergency Medical Aid
- Advanced Life Support
- Hazardous Materials Response
- Fire and Life Safety Inspections
- Public Fire Safety and Prevention Education
- Fire Investigation Services
- Construction Fire Code Plan Review
- Community Relations and Events

The RFA has a total annual budget of approximately \$5,000,000. The RFA reported that in 2008, they protected approximately 1 billion dollars of value/property.

The largest division within the Riverside Fire Authority is the Operations Division, which is responsible for fire suppression, emergency medical services, rescue activities, mitigation of disasters and hazardous materials. In addition to emergency work, Operations Division Firefighters inspect industrial, commercial, and multi-residential occupancies on a regular basis. The Operations Division is comprised of four platoons of career fire fighters operating two companies who work an alternating schedule of 24-hour shifts. Each platoon is supervised on a rotational basis by a Chief Officer who is responsible for the emergency and administrative activities of all members assigned to that platoon. Community based volunteer members and resident volunteer members supplement the emergency response resources.

The operating equipment of the RFA includes:

- 9 structural engines
- 5 water tenders
- 2 mini pumper/rescue
- 5 ambulances
- 2 brush pick ups
- 1 ninety-three foot quint platform truck

RFA Station No. 3, located at 161 Big Hanaford Road, is the closest RFA station to the project site at 3.7 miles away (approximately 5 minutes). RFA Station 3 is a volunteer station with 6 community volunteer personnel. The station has 1 structural fire engine, capable of fighting structure fires.

## **IMPACTS**

### ***Police Protection***

#### **Construction Impacts**

During construction activities, there is the potential for an increase number of calls related to trespassing, theft of construction materials, vandalism, and construction-related complaints. The potential for trespassing, theft, vandalism, etc. during the construction phase is mitigated by the 24 hour 7 day a week operations at the TransAlta Centralia Operations, adjacent to the project site. It is expected that the Lewis County Sheriffs Department has adequate response capacity to serve potential increase in police protection service call volume over the duration of any construction phase.

#### **Operational Activities**

Development of the proposed project would not directly generate additional residents in the County; although the creation of jobs will support growth in county population. As industries locate and become established at the project site, it is possible that this will result in an increased demand on the Lewis County Sheriffs Department during operations due to an increase in traffic and additional calls for police protection due to the anticipated increase in criminal activity (e.g. theft, trespassing, and vandalism) associated with the industrial operations at the project site.

The generation of additional traffic on Lewis County roads will be concurrent with the development of industries on the 7 Areas at the project site.

## ***Fire Protection***

### **Construction Impacts**

Plans for industrial developments will require review for compliance with local and state regulations in regards to fire safety. An additional demand for fire inspections and plan reviews are anticipated. During construction at the project site, there is the potential for an increase in service calls related to injury and fire incidences.

### **Operational Impacts:**

Lewis County has adopted building standards to reduce fire damage from industrial facilities (LCC Title 15). These include measures such as adequate fire hydrants and water pressure and volume for fighting fires, automatic fire suppression and alarm systems, provides of adequate fire lands, and identification of hazardous materials storage and handling procedures.

There is a potential for certain manufacturing and logistics used that could result in the need for handling, temporary storage, and/or transport of hazardous materials. The existing capability to deal with industrial emergencies and hazardous substances is limited by way of staffing, training, and equipment.

The potential presence of multiple story building could also require additional equipment, and a potential for additional training to deal with response to incidents involving such structures.

There is a potential need for additional equipment and training to deal with hazardous materials which could be stored and/or used at the project site. Additional staff time for fire inspections and plan reviews may be necessary.

## ***MITIGATION***

### ***Police Protection***

Upon build-out of the project site, tax collections for the General County Fund are estimated to increase, Lewis County could apply a portion of these added revenues to provide additional resources needed for the Sheriff's Office to address any needs identified during subsequent environmental reviews. Industrial areas typically generate tax revenues in excess of service cost.

### ***Potential Mitigating Measures***

The need for increased police protection services could be evaluated on a case by case basis. as project proposals are received considering the following factors:

- Demand for police services anticipated at time of completion of an industrial park tenant project.
- Scheduled improvements to the Lewis County Sheriff's Department services (facilities, equipment, and officers) and the project's proportional contribution to the demand.
- Whether the individual projects include security and/or design features that would reduce the demand for police services. A full time security plan could be implemented during construction and operations to reduce the potential need for increased police service to the project site.
- The administrative agency of the industrial park could prepare a Security component of the Operations and Maintenance Activities Plan.
- If a facility at the site has 24 hour and 7 days a week operations, this activity will serve as a mitigation measure minimizing, criminal activities such as trespassing and theft.
- Consideration of service needs for other large industrial sites in Lewis County should be considered when measuring impacts.

## **Fire Protection**

An evaluation of the need for increased fire protection services could be made on a case by case basis. Impacts and mitigating measures needed may vary in response to specific tenant characteristics. Potential tenants can institute mitigation measures for protection from fire during construction and operation, including negotiating a contract with local RFD to provide fire protection as well as the TransAlta Centralia Operations.

Potential Mitigation Measures Include:

- During construction, comply with equipment rules and regulations required by DNR for work conducted in wild-land/forested lands (e.g. fire extinguishers, and shovels would be required on each piece of equipment).
- Implement restrictions on burning.
- The industrial park administrative agency could be responsible for monitoring fire conditions at the project site, and for contacting the Washington Department of Natural Resources and implementing necessary fire precautions. A Fire Protection and Prevention Plan can be developed and implemented, in coordination with the Lewis County Fire Marshall and other appropriate agencies.
- On-site emergency plans could be prepared for the project in case of a major natural disaster or accident relating to or affecting the project. The plans would describe the emergency response procedures to be implemented during various emergency situations that may affect the project or surrounding community or environment.
- Possible mutual agreement with TransAlta and County for fire protection services.
- Tenants could be responsible for the following fire protection and prevention measures:
  - Contract with fire district(s) for specialized, additional protection services during construction;
  - Provide special training to fire district and EMS personnel on how to respond to fires related to their specific industry.
  - Provide detailed maps that show all access roads to an individual project;
  - Provide keys to a master lock system that would enable emergency personnel to unlock and gates that would otherwise limit access to the project;
  - Inform workers at the project site of emergency contact phone numbers and train them in emergency response procedures;
  - Carry fire extinguishers in all maintenance vehicles; and
  - Coordinate with Department of Natural Resources and RFA when the fire danger is high.

## **Utilities**

### ***EXISTING CONDITIONS***

Sewer, water, electric and gas facilities are near or on the site, but are not currently able to serve new developments without improvements.

#### ***Gas***

The site is not currently served by available gas utility connections, although gas lines traverse the site. A lateral route crosses through the project site (and continues south to Oregon). The natural gas pipeline lateral connecting into the Bonneville Power Administration (BPA) Ignacio to Sumas Main from the TransAlta 248 megawatt gas-fired, combined cycle combustion turbine power generation facility has existing easements currently protecting these lines and outlining the rights of surface development.

#### ***Sewer***

The site is not currently served with sanitary sewer. The TransAlta Centralia Operations facility has a fully operational waste water treatment plant. The capacity of the treatment facility is unknown but representatives of TransAlta have indicated that under a mutual agreement, they may have the capacity to serve an industrial tenant with 50 to 100 employees; with some upgrades to their existing facility could have capacity to supply service to a larger site with more employees.

Centralia has a new wastewater treatment plant that is located northwest of the City's UGA boundary adjacent to the Chehalis River and provides primary and secondary treatment for the City. The wastewater processing units consist of headworks, aeration basins, clarifiers, UV disinfection, and a plant effluent outfall. Solids processing includes grit removal, dewatering, lime stabilization, heat pasteurization and land application of the resulting Class A extraordinary quality bio-solids on a City owned farm property where hay and occasionally other crops are grown. The Centralia Waste Water Treatment Plant may have adequate capacity to accommodate flows from the TransAlta facility; an agreement with the City of Centralia would be required to serve the project site.

#### ***Water***

There is no existing potable water service to the site with capacity suitable for industrial use. It may be feasible for an industry located at the site to use a well to meet some or all of its water needs (depending on the specific water needs). Water for industrial purposes including irrigation, is limited to 5,000 gallons a day with no state water right permitting requirements.

TransAlta Centralia Operations has water rights for their consumption. An agreement with TransAlta and the DOE would be required before any water rights could be transferred or applied to a potential tenant at the industrial site.

**Table 53 – TransAlta Water Rights Listed in WRATS Database**

Sub Basin Number	Certificate or Permit Number	Holder of Right	Date	Allocated Withdrawal	Allocated Consumptive Withdrawal	Purpose	Permitted Storage Volume (acre-feet)	Water Source
10	S2-25812	TransAlta <sup>15</sup>	4/3/81	140	-	Power	-	Skookumchuck (not available at the proposal site)
10	R2-11862	TransAlta	11/28/66	80	80	Power, Commercial and Industrial	35	Skookumchuck

Source: Chehalis Basin Partnership 2003 Chehalis Base Water Quantity Evaluation

Water use at industrial developments varies dramatically among the diverse range of capital intensive industries. Lewis County water and sewer plans have not documented estimated water use for capital intensive industrial developments. The City of Camas Wastewater Facility Plan, in neighboring Clark County, estimates wastewater volumes at 1,500 gallons per acre per day for “dry” types of industry such as simple assembly and 2,500 gallons per acre per day for “wet” types of industry involving more complex fabrication processes. The recent industrial development for Cardinal Glass was developed on an approximate 90 acres site. Cardinal Glass manufactures glass at the site, and is considered as an industry with moderate intensive water use; they have reported utilizing about 1,200 gallons per acre a day for operations (approximately 108,000 GPD).

**Table 54 – Forecasted Pre Treated Industrial Sewage Flows at Industrial Park on Project Site**

Planning Level	Gallons per Acre per Day	Average Lot Size (Acre)	Daily Flow From A Typical Site (Gallons per Day)
Baseline Flow	1,500	140	210,000
Planning Level	Gallons per Acre per Day	Total Developed Area Size (Acre)	Daily Flow From Total Developed Area (Gallons per Day)
Baseline Flow	1,500	1,000	1,500,000

<sup>15</sup> The Chehalis Basin Partnership 2003, Chehalis Basin Water Quantity Evaluation indicates that the Holder of the Right is Pacific Power and Light. The holder of the right has changed since the publication of the report, Table 53 documents the current holder of the water right.

It is likely that at least two of the seven industries at the site will not use a large amount of water for production or operational purposes, which can dramatically reduce the amount of water consumed at the project site. While planning level estimates indicate a need of 1.5 million gallons per day, this is assumed to be a conservative assumption with the actual amount of water at the site being consumed assumed to be less.

**Electricity**

Electricity is currently generated at the edge of the site at TransAlta Centralia Operations, but the plant can not directly supply the site. The project site is located within the service area of the Lewis County Public Utility District (PUD).

**Natural Gas**

Puget Sound Energy (PSE) provides natural gas service in this area. PSE has indicated willingness to supply natural gas service to users of the project site, and stated that they control enough capacity on the pipeline system to provide this service.

In correspondence with PSE, they have indicated that in order to serve the site with natural gas, they would need to extend their intermediate pressure system a little over 4 miles which would include river and creek crossings and two railroad crossings. PSE estimated that it would cost approximately 3.5 to 4 million dollars to serve the site with natural gas - approximately \$175 to \$200 a linear foot (Appendix 4).

**IMPACTS**

**Sewer**

At full build out, the need for sewer processing capacity at the site is forecast as approximately 1.5 million gallons per day (GPD).

**Table 55 – Forecasted Sewage Flows (pre-treated and domestic) at Industrial Park on Project Site**

Development	Total Acre	Assuming 2.2 Employees an Acre	Forecasted Domestic Wastewater (Developments 1-4) *Assuming 15 GPD per employee	Forecasted Pre-Treated Industrial Wastewater (Areas 1-4) *assuming baseline flow	Total - GPD
1	140	308	4,620	210,000	214,620
2	140	308	4,620	210,000	214,620
3	140	308	4,620	210,000	214,620
4	140	308	4,620	210,000	214,620
<b>Sub Total</b>	<b>560</b>	<b>1,232</b>	<b>18,840</b>	<b>840,000</b>	<b>858,480</b>
5	140	308	4,620	210,000	214,620
6	140	308	4,620	210,000	214,620

Development	Total Acre	Assuming 2.2 Employees an Acre	Forecasted Domestic Wastewater (Developments 1-4) *Assuming 15 GPD per employee	Forecasted Pre-Treated Industrial Wastewater (Areas 1-4) *assuming baseline flow	Total - GPD
7	140	308	4,620	210,000	214,620
<b>Sub Total</b>	<b>420</b>	<b>924</b>	<b>13,860</b>	<b>630,000</b>	<b>643,860</b>
<b>TOTAL</b>	<b>980</b>	<b>2,156</b>	<b>32,700</b>	<b>1,470,000</b>	<b>1,502,340</b>

Options for the treatment of domestic wastewater generated at the project site include: (1) on-site septic system (2) new wastewater treatment plant, (3) expand the existing treatment plant at TransAlta, and (4) convey wastewater to Centralia.

If domestic wastewater is to be treated and returned to the ground, increased recharge to the ground water would occur. Pre-treated wastewater may be piped to the Centralia wastewater treatment plant. This Option would be contingent upon contractual arrangement with the City of Centralia.

### **Water**

Operation of an industrial park facility at the project site will create a demand for water and infrastructure necessary to convey flows from a source. At full build out of the project site (assuming seven 140 acre industrial zoned tracts) it's forecasted there will be the need for approximately 1.6 million gallons of water per day. This need for domestic and process water is shown as below:

**Table 56 –Domestic Water Needs Forecast**

Domestic Water Need Estimate (GPD) per Employee <sup>16</sup> Full Development	2.2 Employees an Acre on an 140 Acre Tract	Forecasted Domestic Water Need on 100 Acre Site
15 GPD/Employees	308 Employees	4,620 GPD
Domestic Water Need Estimate (GPD) per Employee Full Development	2.2 Employees an Acre on an 1,000 Acres Targeted for Development	Forecasted Domestic Water Need on 1,000 Acres Targeted for Development
15 GPD/ Employees	2,200 Employees	33,000 GPD

<sup>16</sup> Department of Health. Water System Design Manual. August 2001.

Most capital intensive industries at the project site would need water for industrial process purposes than can be produced by a 5,000 GPD water well. Water use at industrial developments varies dramatically among the diverse range of capital intensive industries. Lewis County water and sewer plans have not documented estimated water use for capital intensive industrial developments. The City of Camas Wastewater Facility Plan, in neighboring Clark County, estimates wastewater volumes at 1,500 gallons per acre per day for “dry” types of industry such as simple assembly and 2,500 gallons per acre per day for “wet” types of industry involving more complex fabrication processes.

**Table 57 –Forecast of Industrial Sewage Flows at Project Site**

<b>Planning Level Typical Site</b>	<b>Gallons per acre per day (GPAPD)</b>	<b>Average Lot Size (Acre)</b>	<b>Total Daily Flow (Gallons per Day)</b>
Baseline Flow	1,500	140	210,000
<b>Planning Level Full Development</b>	<b>Gallons per acre per day (GPAPD)</b>	<b>Acres Targeted for Development at the Site</b>	<b>Total Daily Flow (Gallons per Day)</b>
Baseline Flow	1,500	1,000	1,500,000

***Electricity***

The Lewis County PUD has indicated that it is capable of providing electrical service to the users at the project site. Multiple sub-stations at the site may be required, depending on the details of electrical load requirements and other considerations of the PUD’s service planning. Generally, the costs of line extensions are borne by the developer or tenants. The PUD will determine the responsibility for the costs of substations after evaluating loads, locations, and revenues from future customers. A letter from the Lewis County Public Utility District to Huitt-Zollars indicating the capability to provide service is included in Appendix 4.

***Natural Gas***

Representatives at Puget Sound Energy (PSE) have indicated that they will be required to extend their immediate pressure system a little over 4 miles which would include several river and creek crossings and a at least two rail crossings. The cost is estimated to be in a range of 3.5 to 4 million dollars.

**MITIGATION MEASURES**

Utilities, including sewer and water services, will need to be extended to, or developed on the project site, in order to facilitate large tract capital intensive industrial development at the project site. Optional measures for providing on and off site utility service to the project site are discussed in Chapter 2-3 of this study.

# Chapter 2-2: Partner/Stakeholder Review

Development approval processes for the project will involve federal, state and local agencies. This chapter provides an annotated list indicating major approvals that are likely required. The Growth Management Act and State Environmental Policy indicate that changes in land use require consultation/comment opportunities be provided to the general public, adjacent cities and agencies with jurisdiction. This document is intended to provide one source of information for that process. Community needs for the project are described in Chapter 1-1 and 1-2 of this report.

## Land Use Approvals

**Office of Surface Mining** - Responsible for release of areas from permit jurisdiction following reclamation; possible changes in permit requirements to allow reclamation to industrial use standards.

**Lewis County** - Designation of the area as a master planned location for major industrial activity. RCW 36.70A.368 allows for following potential steps.

1. Adoption of a process to designate a site
2. Review of the project under the State Environmental Policy Act (SEPA) including an infrastructure plan for the development. SEPA environmental review could take the form of a "Planned Action" or a "Phased Review"
3. Adoption of changes to the Comprehensive Plan (Also reviewed by the State Department of Community Trade and Economic Development)
4. Adoption of development regulations for the site

## Infrastructure Approval

The following agencies have approval authority for infrastructure improvements at the project site. Approval agency(ies) will vary with specific infrastructure characteristics.

**Storm Drainage:** Lewis County, Washington State Department of Ecology

**Sewer:** Washington State Department of Ecology, Lewis County Department of Health, Washington State Department of Health

**Water:** Washington State Department of Health, Washington State Department of Ecology, City of Centralia (potential supplier), TransAlta (potential supplier)

**Roads:** Lewis County

**Electricity, gas and telecommunications:** Approval by supplier and agency controlling right of way

## Environmental Quality Regulation

Following release from the Office of Surface Mining's jurisdiction, the agencies listed below will have permitting authority for aspects of individual development proposals within their respective jurisdictions.

**Air Quality:** Southwest Clean Air Agency, Washington Department of Ecology (large developments)

**Surface and Ground Water Quality** - Washington Department of Ecology, Lewis County

**Critical Areas Protection:** Wetlands, streams, steep slopes, landslide hazard areas, erosion hazard areas, seismic hazard areas - Lewis County, US Army Corps of Engineers (wetlands)

**Threatened and Endangered Species:** US Fish and Wildlife Service, Washington State Department of Fish and Wildlife, Washington Department of Natural Resources.

**Grading, Temporary Erosion Control:** Lewis County, Washington Department of Ecology

**SEPA:** review (under a planned action or phased review process) - Lewis County

# Chapter 2-3: Engineering and Design

This chapter provides a preliminary technical study of the earthwork, transportation, and utility infrastructure required to develop the proposed project. Discussions on infrastructure necessary to serve tenants at the site are presented as follows:

- Earthwork
- Transportation
  - On Site Roads
  - Off Site Roads
  - On Site Rail
  - Off Site Rail
- Water
  - On Site Water Distribution
  - Off Site Water Supply
- Sewer
  - On Site Sewer System
  - Off Site Sewer Treatment
  - Storm Water Management System
- Dry Utilities

# EARTHWORK

A detailed study of earthwork quantities required to develop the project is not included within this report. The existing information on topography is not detailed enough to prepare preliminary grading designs. In addition, the grading needs of tenants at the project site are not known.

Earthwork costs needed for road and utility construction are included in the unit costs for the items. Development Areas within the project site generally contains level bench areas. These areas are not located at elevations where rail access is feasible without regrading. One option that may warrant further study is a cooperative regrading/reclamation approach for Area 1, 2, and 3, if initial marketing efforts indicate that rail access within development areas is important. Because TransAlta has ownership of large earthmoving equipment, possible disposal options at the mining facilities, and knowledge of post reclamation earth moving requirements they may be the best entity to estimate costs associated with leveling some or all of sites 1, 2, and 3.

To develop an extremely rough estimate of cost for the creation of a level 20 acre rail-served area, a cut of an average 15 feet depth and on-site disposal was assumed. Grading a 20 acre area would require moving 500,000 cubic yards of material per site. Cut and fill costs to accomplish this work, by contractor, assuming use of large equipment and disposal within the development area, may range between \$6.50 and \$9.60<sup>17</sup> per cubic yard. Costs for leveling the 20 acre area would be \$3,250,000 to \$4,800,000. The cost for TransAlta Centralia Operations may be significantly lower due to the size of earth moving equipment and expertise.

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<sup>17</sup> RS Means Site Work and Landscape Data, 27<sup>th</sup> Edition. 2008.

# TRANSPORTATION IMPROVEMENTS

This section includes discussion of improvements needed to facilitate the movement of people and goods, both within the site and to and from the site. In order to facilitate capital intensive industries some transportation improvements will be needed to accommodate industrial operations. Transportation infrastructure improvements are discussed as follows:

- **On Site Road System Improvements**
- **Off Site Road System Improvements**
- **On Site Rail**
- **Off Site Rail**

## On-Site Road System Improvements

A road network alignment was planned to provide access to the seven development areas from either existing County roads or a new internal roadway network. The roadway network is shown on Exhibit 2. The roadway network was planned to avoid the central valley wetlands and Packwood Creek. Road A, along with Big Hanaford Road, can serve the north part of the site with Road B serving south part of the project site. Roads are shown on or parallel to existing coal mining road beds, except in cases where the coal mining road is needed for mining reclamation operations, where new roads are shown adjacent to coal mining roads.

### Interior Roads

Access to the project site is proposed off Big Hanaford Rd. Asphaltic concrete road surfaces are planned within the park (no curbing) with shoulders and open ditch and swale drainage. The pavement section will at a minimum, conform to Lewis County specifications.

The existing Main Haul road (compacted dirt) to Kopiah (mining area to the south) will need to be maintained as an access haul road for TransAlta. If mining commences south of the project site, TransAlta will use this unpaved road (approximately 60 to 80 feet in width) for coal haul trucks (approximately 26 feet wide) and support equipment. Traffic on Main Haul Road will be limited to reclamation and mining operations vehicles. Trips have been estimated at 30 trips per day over 16 hours M-F in summer months. Future traffic, if mining is in progress, could be 150 trips per day over 24 hours<sup>18</sup>.

A second haul road (compacted dirt) to Pit 7 (which follows the northwest boundary of Area 5) will be required to be maintained at the project site for use by TransAlta. Frequency of trips to this pit are estimated to be 10-15 per day<sup>19</sup>.

Phased development of the road network as presented in this report is intended to reduce initial cost. Scheduling of improvements can be modified to accommodate specialized transportation needs of potential users. Planned road sections include space for utilities in the road shoulders so that development of roads can occur concurrently with utilities such as water and sewer or separately.

Conceptual on-site road network to serve the proposed industrial sites generally follows Lewis County Rural Road Section 3-2 and incorporates:

- use of existing unpaved road alignment (upgraded) wherever possible;
- specialized needs of large tractor trailers handling manufactured goods;
- need to keep Main Haul Road free of industrial traffic to avoid conflict with TransAlta's operations;
- space for utilities serving the site; and
- alignment follows existing topography to minimize grading

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<sup>18</sup> Information from email from Roger Fish, Director, Land Management, TransAlta Centralia Mining, LLC, 2009

<sup>19</sup> Information from email from Roger Fish, Director, Land Management, TransAlta Centralia Mining, LLC, 2009

Exhibit 2 shows two new interior roads (Road A and Road B) developed in an 80 foot right-of-way, with:

- Two 12-foot driving lanes
- A 12-foot turn-lane with optional planted median
- Two 10-foot shoulders (graveled)
  - Shoulders to be used as a 10-foot wide corridor on either side of the road for utilities (electricity, natural gas, communications, water, and sewer)
- Two 12-foot ditches/swales on both side of the road

### **ROAD A**

Road A serves the north portion of the park, Areas 1, 2, 3, and 4. In the beginning phases of development at the project site, Big Hanaford Road can be used as a point of access to Areas 1, 2, 3, and 4, with minimal improvements to Big Hanaford. As the park develops and industries expand, Road A can be constructed to provide improved access for safety (fire) and internal circulation of freight and employees.

If Big Hanaford Road is used in interim for access to Areas 1, 2, 3, and 4 and funds for development of Road A can not be secured, a minimum of 80 feet of right of way in vicinity of Road A should be retained for:

- Utility development corridor
- TransAlta monitoring road
- Emergency ingress and egress (unpaved)
- Future road development

Road A is shown to be constructed on an existing mining road grade and would use an existing access point off of Big Hanaford Road between Areas 2 and 3. If completely developed it would serve development Areas 2, 3, and 4. The approximate length of Road A is 12,700 linear feet.

Access will be required to the Lake adjacent to Area 4 for reclamation operations with 26' wide vehicles. If Road A is constructed before the reclamation efforts are completed, access to the Lake by over-sized vehicles should be planned to be adjacent to Road A. Subsequent to the reclamation efforts, TransAlta will need to have access, with standard sized vehicles, to the Lake for a minimum of five years for monitoring. Access can be achieved by TransAlta using Road A if a mutual access agreement is in place.

### **ROAD B**

Road B serves the south portions of the project site, Areas 5, 6, and 7 (along with providing another point of access to Area 1). Road B is planned just west of an existing access point off Big Hanaford Road. Avoiding/minimizing impacts to Packwood Creek was considered when planning the alignment of Road B. Part of the road is shown to be constructed on an existing mining road grade past Area 1, but beyond Area 1 to the south it is shown adjacent to the existing road grade (Main Haul Road) which may be used by TransAlta for future mining activities south of the project site.

When completely developed Road B would serve as a second point of access for Area 1 and as primary access for Areas 5, 6, and 7. The approximate length of Road B is 10,650 linear feet. Road B is also planned as a utility corridor.

## Phased Development of Road Network

New roads at the project site can be constructed in phases, allowing flexibility in serving needs of capital intensive industries and granting administrators of the industrial park the ability to align capital expenditures with needs and requirements of end users.

### **PHASE 1**

Areas 1, 2, and 3 will be the first areas at the project site available for development. Along with Area 4, these areas have direct ingress/egress from Big Hanaford Road and could possibly be developed without constructing Road A.

Road A, shown on Exhibit 2, may be constructed as an internal circulation road to facilitate freight and employee circulation for Areas 2 and 3 and provide a more direct route to Area 4. Road A is likely to be developed in two distinct stages, the first segment of Road A (approximately 5,700 linear feet) that would serve Areas 2 and 3 is likely to be developed in Phase 1 with the second segment serving Area 4 (approximately 7,000 linear feet) being developed in Phase 3 (see below).

### **PHASE 2**

Area 4 is likely to be reclaimed in the next 5 to 10 years. Area 4 has access off of Big Hanaford Road. This area could be developed prior to construction of Road A access. Under this approach sewer and water would be extended in the Road A corridor without paving the road. Road A would be constructed at a future date if needed to carry site traffic. The second segment of Road A, approximately 6,750 linear feet, would extend the internal access Road A to Area 4. Road A will reduce amount of miles traveled to get to Area 4 on Big Hanaford Road by a mile and will reduce trips occurring adjacent to rural residential homes on Big Hanaford Road.

### **PHASE 3**

Areas 5, 6, and 7 will continue to undergo reclamation and are anticipated to be transferred to park management and available for industrial development in 10 to 15 years. Road B, approximately 9,800 linear feet, (Exhibit 2) is planned to provide access to Areas 1, 5, 6, and 7 and a second point of access to Area 2.

### **ENTRANCE**

A formal entrance to the industrial park is a suggested mechanism for marketing the site. An entrance to the park can be as minimal as a sign indicating the name of the industrial park or can include a formal entry indicating a sense of place, arrival, and identity.

**Figure 12 – Industrial Park Gateway Improvements Rendering**



Source: Mint Farm Industrial Park Development Plan

## Opinion of Cost

Internal roads will be developed as needed to accommodate industries. It may be feasible to impose a road development permit fee to help to establish concurrency with the need for internal roads.

The opinion of probable costs for Road A and B includes provisions for:

- Earthwork
- Paving
- Plantings
- Utility Trench
- Traffic signing
- Lighting, and
- Storm Drainage

**Table 58 –On-Site Road Development Opinion of Probable Costs**

Area Served	Road Segment	Linear Feet of Road Improvements Required for Access	Estimated Cost per Linear Foot		Estimated Cost	
			Low	High	Low	High
<b>Road A</b>			Low	High	Low	High
<b>2 &amp; 3</b>	Road A: Segment 1	5,700	\$540	\$640	\$3,078,000	\$3,648,000
<b>4</b>	Road A: Segment 2	7,000	\$540	\$640	\$3,780,000	\$4,480,000
<b>SUB-TOTAL</b>	<b>ROAD A</b>	<b>12,700</b>	<b>\$540</b>	<b>\$640</b>	<b>\$6,858,000</b>	<b>\$8,128,000</b>
<b>Road B</b>						
<b>1</b>	Road B: Segment 1	4,300	\$540	\$640	\$2,322,000	\$2,752,000
<b>7</b>	Road B: Segment 2	3,150	\$540	\$640	\$1,701,000	\$2,016,000
<b>5 &amp; 6</b>	Road B: Segment 3	3,200	\$540	\$640	\$1,728,000	\$2,048,000
<b>SUB-TOTAL</b>	<b>ROAD B</b>	<b>10,650</b>	<b>\$540</b>	<b>\$640</b>	<b>\$5,751,000</b>	<b>\$6,816,000</b>
<b>TOTAL</b>	<b>ROAD A &amp; B</b>	<b>22,350</b>			<b>\$12,609,000</b>	<b>\$14,944,000</b>

### Assumptions:

The opinion of probable costs includes the following assumptions:

- development of the roads will not involve soil work not typical in road construction
- no utility relocation

- no retaining walls
- no soil import/export
- internal lot roads will be the responsibility of the developer

Table 57 indicates an investment of \$12 to \$15 million for roads. This cost can be reduced by not including a planter within the road design. The cost of the planter (vertical curb around the median) is \$60 a linear foot, therefore cost to place curb around median adds an additional approximately \$1,476,000 to the total cost of the road network.

***Cost of Improvements to Main Haul Road***

The Main Haul Road that transverses the site from the operations plant to future mine areas south of the project site. Approximately 17,500 linear feet will be temporarily maintained for use by TransAlta during reclamation activities. If mining commences to the south, the Main Haul Road will need to be used by coal haul trucks and support equipment without interfering with industrial park operations.

**Suggested Improvements:**

To mitigate the impact of mining trucks on the main haul road, trees are shown to be planted every 30 feet along the mining use road with seeding in a strip approximately 100 feet wide on either side. Dust control measures such as watering or application of dust control compounds may also be appropriate (these costs are not considered).

***Cost of Improvements Area 5 Ash Haul Road***

An ash pit is currently in operation in the northern portion of Area 5. The ash pit will remain in operation by TransAlta after the reclamation for an indeterminate amount of time. A temporary haul road (approximately 2,700 linear feet) will be required along the northwest lot line of Area 5. This unimproved access through Area 5 off of the main haul road will be used by TransAlta to transport ash to the site.

**Suggested of Improvements:**

To mitigate the impact to the industrial park from mining trucks using the mining haul road, trees are shown to be planted every 30 feet along the mining haul road (hydroseed 100' wide is included). Dust control measures such as watering or application of dust control compounds may also be appropriate (these costs are not considered).

**Table 59 – Haul Road Opinion of Probable Costs**

Area	Road Section	Number of Screening Trees with Irrigation and Hydroseeding	Estimated Cost per Linear Foot	Estimated Cost
Kopiah Mine	Main Haul Road	1,167	\$35	\$40,485
Ash Disposal	Ash Disposal Haul Road	180	\$35	\$6,300

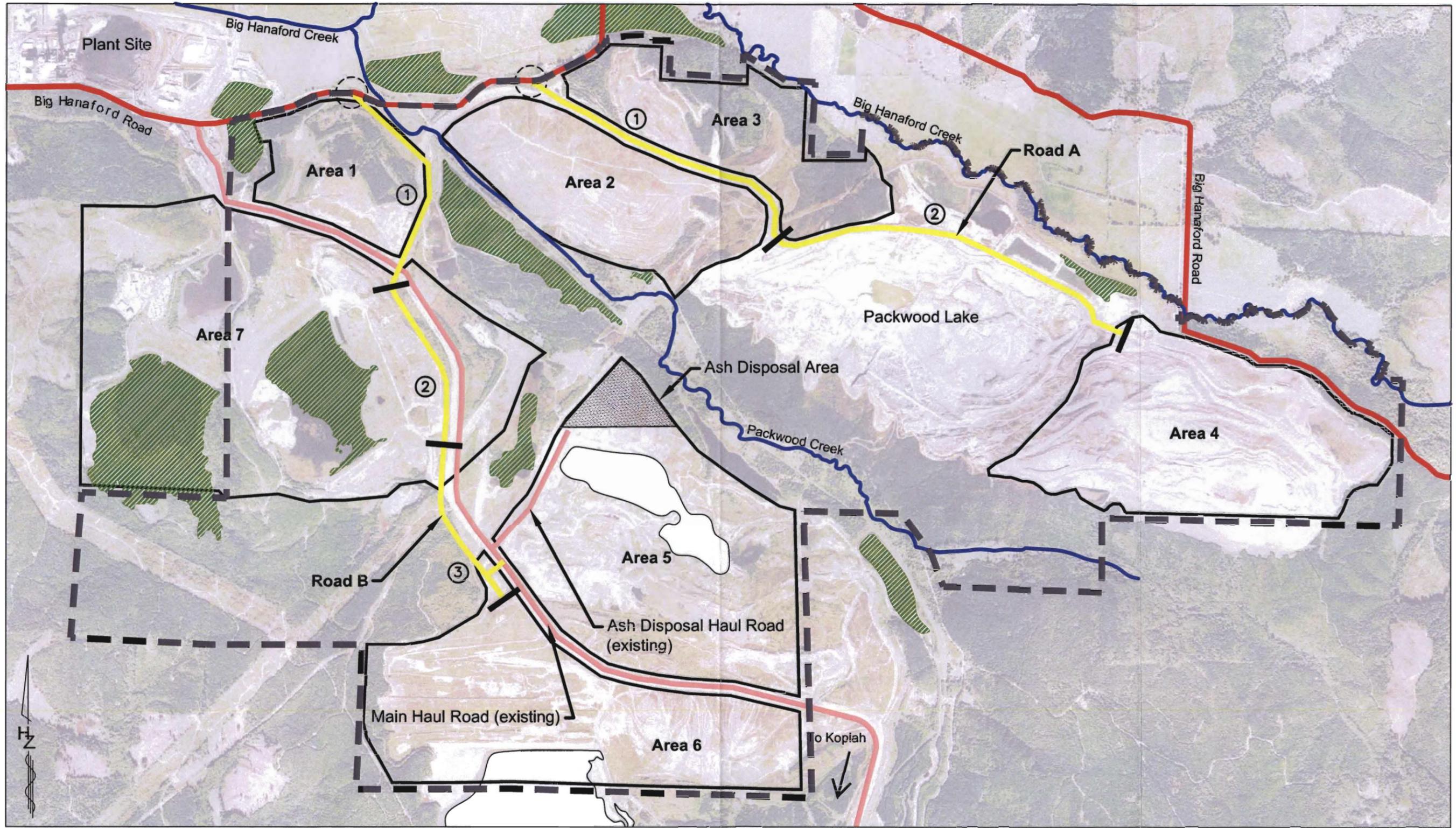
**Assumptions:**

The costs for the landscaping improvements for the haul road will not include:

- utility relocation
- retaining walls
- soil import/export
- surface treatment for dust control

## Exhibit 2. On Site Road Alternatives

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**Legend**

- INTERNAL INDUSTRIAL ROAD NETWORK (PROPOSED)
- BIG HANAFORD ROAD (EXISTING)
- MAIN HAUL ROAD (EXISTING)
- PROJECT SITE
- TO BE FILLED (POST RECLAMATION)
- RIVER/CREEK
- POST RECLAMATION WETLAND (APPROXIMATE)
- POTENTIAL ENTRY SIGNAGE

	Segment	Linear Feet
Road A	①	5,700
	②	7,000
Road B	①	4,300
	②	3,150
	③	3,200

**On-Site Road Alternatives**  
**Exhibit 2**  
 2009

## Off Site Road Improvements

### **BACKGROUND**

This section provides a summary of a more complete discussion contained in Chapter 2-1 Environmental Review. The project site is located about 6 miles east of Interstate 5 adjacent to the TransAlta Centralia Operations facility. The most direct Truck Route from the site to I-5 (exit 82) is via Big Hanaford Road to Highway 507 (N. Pearl Street) to Reynolds Avenue to Harrison Avenue (a road distance of about 8.5 miles). The transportation network associated with the project site was previously responsible for accommodating the travel needs of over 1,000 employees at the mining facilities on and adjacent to the project site. In 1999 employment at the mining facilities on and adjacent to the project site was over 600, now TransAlta Centralia Mining, along with the Operations facility employs 300.

There are two interchanges on I-5 near the project site (1) the Grand Mound Interchange/Exit 88 and (2) the Harrison Street Interchange/Exit 82. Highway 99 provides a parallel route to I-5 on the west side between exits 88 and 82. An overpass over I-5, but no interchange is located at 216th Ave SW about halfway between exits 88 and 82, this street connects to Highway 99 on the west side of I-5 but is a dead end on the east side of I-5. The diamond interchange at Harrison is located in the City of Centralia; this interchange is controlled with a traffic signal where the ramp terminals intersect with the City's arterial network. The interchange at Grand Mound is not controlled with a traffic signal.

### **TRUCK TRAFFIC**

Truck freight is expected to travel between I-5 and the project site on the on the fastest legal route. The City of Centralia's Comprehensive Plan, Map 6 (Appendix 3) demonstrates designated freight routes in the City.

### **Level of Service**

The City of Centralia Comprehensive Plan Transportation Element states, "employment and population growth is anticipated to impact existing roadways by stressing the capacity at certain locations and intersections...when industrial, employment, and population growth were factored in, the travel demand model showed stressed capacity." The plan indicated that the capacity improvements by 2030 will likely be necessary to maintain and preserve functionality of the system while keeping consistent with adopted standards.

The Harrison Street on ramp to I-5 is the closest on/off ramp to I-5 from the project site. Harrison Avenue from Johnson Road to I-5 is one of the roads anticipated to be a LOS F by 2030, capacity improvements will likely be necessary to maintain and preserve functionality of the system while keeping consistent with adopted standards.

### **Scheduled Projects**

Several projects are underway that will improve the capacity to absorb the impacts of industrial development at the project site. WSDOT is currently working on several projects that will help facilitate transportation operations to and from the project site.

#### **I-5 Koonts Road to Harrison Avenue Paving**

Asphalt pavement on this section of I-5 is deteriorating due to age and normal wear. Resurfacing the interstate will repair ruts and cracks in existing pavement and extend the life of the roadway, in addition to

providing a smoother and safer ride for motorists. The project will also strengthen and preserve road surface, allowing I-5 to continue handling heavy commuter and freight traffic.

#### Blakeslee Junction (Reynolds Avenue) to Grand Mound

This project will widen 4 miles of I-5 from two lanes to three lanes in each direction between the Blakeslee railroad junction in Lewis County (milepost 83.5) and just south of the Grand Mound interchange (Exit 88) in Thurston County. Construction of this project has been rescheduled for 2010 to avoid overlap between this project and the project currently underway immediately north, the widening of I-5 from Grand Mound to Maytown. WSDOT is currently working on the design, environmental permitting, and right-of-way acquisition for this project. Project benefits identified by WSDOT include:

- Safety - as traffic levels increase on this section of I-5, safety problems are expected to grow. Widening this component of the interstate will help address these potential problems.
- Mobility - this project will increase roadway capacity and traffic flow by widening approximately four miles of I-5 between the Blakeslee Railroad Junction in Lewis County and just south of the Grand Mound Interchange (Exit 88) in Thurston County.
- Economic - this project will help increase economic development in this area by improving freight mobility through Lewis and south Thurston County.

Construction is scheduled to be completed in 2012.

#### Blakeslee Junction (Reynolds Avenue) to Mellen Street

WSDOT is moving forward with the project designs for further I-5 improvements from the Blakeslee Junction to Mellen Street. Improvements include a collector distribution lane between Mellen Street (Exit 81) and Harrison Avenue (Exit 82) interchanges; these are planned to improve safety by eliminating the existing traffic merging conditions and by keeping local traffic off mainline I-5. This project will construct a new bridge over I-5 south of the Mellen Street and will connect to Mellen Street interchange and collector distributor lanes by using frontage roads. The new bridge will connect to the existing Mellen Street Interchange and CD lanes using Airport Road and Ellsbury Street. This split interchange configuration will allow traffic to circulate with one direction flow. Additionally, as part of this project, I-5 will be widened and re-aligned at the Blakeslee Junction curve. Project benefits identified by WSDOT include:

- Safety - this project will increase roadway capacity and improve traffic flow through Lewis County by providing CD lanes between the Mellen Street and Harrison Avenue interchanges.
- Mobility - as traffic levels increase on this section of I-5, safety problems are expected to grow. CD lanes will reduce collisions by eliminating weave conditions between the Mellen Street and Harrison Avenue interchanges.
- Economic - this project will help increase economic development in this area by improving freight mobility through Lewis and south Thurston County.

Construction is scheduled to be completed in 2014.

#### North County Interchange

WSDOT is in the early stages of the process for determining feasibility of an interchange off Interstate 5 that would among other things, facilitate traffic to and from the project site. The study is currently underway, no information is available on when design would be completed and constructed or how the project would be funded. The first phase of the report is anticipated to be completed in May of 2009 with

a recommendation to move forward with further analysis of feasibility of the interchange. The North County Interchange would be located south of Grand Mound Interchange and north of the Harrison Ave Interchange. The interchange could be designed so that a road could be developed connecting directly to Big Hanaford Road.

**Employee Traffic**

Employment data from 2006 and 2009, provided by TransAlta Centralia Operations, was reviewed to estimate potential travel patterns to and from the project site. The data indicates that the two largest percentages of employees are traveling from Chehalis (27%) and Centralia (20%), with the third largest group traveling from the Olympia area (11%).

**Table 60 – 2009 Distribution of TransAlta Employees**

<b>Closest Urbanized Area to Employee Zip Code</b>	<b>2009 TransAlta Employees</b>	<b>Percent</b>
Chehalis	83	27.21%
Centralia	61	20.00%
Olympia	35	11.48%
Rochester	21	6.89%
Winlock	17	5.57%
Tenino	17	5.57%
Onalaska	9	2.95%
Lacey	9	2.95%
Toledo	8	2.62%
Napavine	6	1.97%
Mossyrock	5	1.64%
Lewis County	5	1.64%
Yelm	4	1.31%
Rainier	4	1.31%
Grays Harbor	3	0.98%
Tacoma	2	0.66%
McKenna	2	0.66%
Longview	2	0.66%
Harmony	2	0.66%
Galvin	2	0.66%
South Jordon (UT)	1	0.33%
Shelton	1	0.33%
Renton	1	0.33%
Ranier (OR)	1	0.33%
Prosser	1	0.33%
Gig Harbor	1	0.33%
Dayton	1	0.33%
Chimacum	1	0.33%
<b>TOTAL</b>	<b>305</b>	<b>100.00%</b>

Source: TransAlta Centralia Operations

The employment data also indicates there were just over 900 people employed by TransAlta Centralia Operations in 2006. A comparison of 2006 and 2009 data demonstrates that the general vicinity of the location employees are traveling from to get to work at the facilities has changed very little, but quantity of trips has dramatically reduced. There are 72% (156) fewer employees from Centralia and 65% (156) fewer employees from Chehalis traveling to the facility.

**Table 61 – 2006 Distribution of TransAlta Employees**

Closest Urbanized Area to Employee Zip Code	2006 TransAlta Employees	Percent
Centralia	217	23.79%
Chehalis	239	26.21%
Rochester	77	8.44%
Tenino	63	6.91%
Olympia	54	5.92%
Onalaska	53	5.81%
Winlock	40	4.39%
Other	169	18.53%
<b>Total</b>	<b>912</b>	<b>100.00</b>

Source: TransAlta Centralia Operations, Human Resources

## Potential Trips Added to Existing Transportation Network

Improvements to the infrastructure system are to be planned and implemented concurrently with development of industries. Under the provisions of the Growth Management Act, improvements to the infrastructure system are to be implemented concurrently with the need as determined by impact to adopted Level of Service. The transportation analysis prepared for this report did not include modeling to identify impacts to specific intersections. Previous studies of documented congestion occurring in the City of Centralia, while County roads have excess capacity.

Due to uncertainties related to timing of development and road improvements planned by others the need for a specific package of off-site improvements was not recommended. Analysis in this section of the report suggests that the traffic impact from the proposal may be managed through congestion management practices such as off-peak shift times, designated commute and freight routes, and options such as carpooling incentives, to avoid exceeding adopted Level of Service standards during peak travel times. A phased approach to traffic mitigation is suggested whereby management of existing infrastructure is suggested and improvement measures are implemented as the project proceeds.

The development of the project site into a large tract industrial park is anticipated to happen in phases, with full build out anticipated in 15 to 25 years. In developing assumptions on trips that would be generated by development of large capital intensive industries at the project site, information from the Institute of Transportation Engineers was reviewed. The 7<sup>th</sup> Edition of the ITE indicates that general heavy industry generates an average range of rates of 0.75 to 1.81 trips per employee on a weekday.

The forecasted low and high range of weekday trips, using the assumption of 2.2 employees per acre, at an industrial development at the project site is shown in Table 61.

**Table 62 – Average Trips per Development Areas at Industrial Park on the Project Site**

Development	Assumed Estimated Lot Size (acres)	2.2 Average Number of Employees per Acre	0.75 Low Range of Employees	1.81 High Range of Employees
1	140	308	231	558
2	140	308	231	558
3	140	308	231	558
4	140	308	231	558
5	140	308	231	558
6	140	308	231	558
7	140	308	231	558
<b>TOTAL:</b>	<b>980</b>	<b>2,156</b>	<b>1,617</b>	<b>3,906</b>

From an review of the impacts of forecasted trips in relation to trips during the peak of mining operation at and adjacent to the project site, it is estimated that roughly half of the proposal site can be developed before trips generated exceed the level of impacts experienced during mining operations.

- Over 600 positions at the TransAlta mining operations have been cut.
- The 600 employees that formally held these positions at TransAlta are estimated to have generated approximately 450 to 1,086 trips on a weekday.
- A typical 140 acre industrial development at the project site is forecasted to generate approximately 231 to 558 trips.

**Table 63 – Average Trips per 140 Acre Site**

Average Employees per Acre	Estimated Lot Size	Average Number of Employees at Estimated Lot Size	(Low Range) Estimated Trips per Weekday of 0.75	(High Range) Estimated Trips per Weekday of 1.81
2.2	140	308	231	558

Source: ITE Trip Generation Manual, 7<sup>th</sup> Edition

## Planning for Transportation Network Enhancements

It is documented in Appendix E: Transportation Assessment of Site “A” of the Lewis County Prime Industrial Lands Study (February 1999) that at one time the Centralia Mining Company employed over 1,000 employees; in 1999 at the time of the study, it was documented that there were approximately 600 employees at the site. There are now approximately 300 employees at the TransAlta Centralia Operations.

Assuming the capacity used during mine operations is still available, the first capital intensive development at the project site may not need to make improvements to the exiting transportation system. The forecast of the amount of employees generated at an average lot size of 140 acres is approximately

308 employees. There have been approximately 600 positions cut at the TransAlta Centralia Operations; the 600 jobs that were cut are estimated to have generated:

- 450 trips a day (low range estimate)
- 1,086 trips a day.(high range estimate)
- The assumption is that there will be 2.2 employees per acre at an industrial development at the park; the average lot size at an industrial park at the project site is anticipated to be 140 acres (minimum lot size is 100 acres) Therefore, it is assumed that there will be approximately 308 employees at the first development.
  - The low range of trips generated by these 308 employees is 231.
  - The high range of trips generated by these 308 employees is 558.

If at the time of review of individual tenants proposal at the project site, it is found that the traffic generated by activities at the site will impact an intersection in Lewis County or the City of Centralia beyond the adopted level of service per the Comprehensive Plans, it may be feasible for tenants and the City and County to agree on congestion management measures that would avoid impacting areas beyond the adopted level of service at peak operating times.

### ***TRANSPORTATION NETWORK AND MANAGEMENT IMPROVEMENTS***

The following options were investigated to ensure that there are feasible improvements that can be made to the transportation network if a potential industry at the project site is found to have an impact on the network that would exceed adopted level of service at specific locations. Measures are intended to avoid, minimize, and mitigate impacts to the transportation network caused by traffic generated from capital intensive industries at the project site. The options discussed are a result of the environmental analysis performed in Chapter 2-1. Analysis of the transportation network and the potential impacts was performed using existing documentation of the capacity in Lewis County and Centralia. The potential improvements are discussed in two categories, (1) congestion management practices and (2) road improvements.

Based upon the City of Centralia and Lewis County goals and objectives as documented in their Comprehensive Plan, the goals of the transportation management and improvements indentified in this report are to:

- Provide alternatives to using the Harrison Interchange (Exit 82).
- Avoid sending traffic through downtown Centralia.
- Facilitate the use of parallel routes (north bound and south bound) between Exit 88 and 82 on both the east and west side of Interstate-5.
- Avoid adding traffic to areas stressed with capacity at peak travel times.
- Reduce single occupancy vehicles (SOV) traveling to the site.

### ***Congestion Management Practices***

The approach to planning for transportation improvements was to avoid impacting the network so that new infrastructure would not be required to facilitate transportation operations. The goals of

improvements are to minimize adding traffic to congested areas of the transportation network, especially at peak times. Improvements planned are to address areas in the network that have been identified as performing below the adopted level of service.

Congestion is a condition that is characterized by slower speeds, longer trip times, and increased queuing; when traffic demand is great enough that the interaction between vehicles slows the speed of the traffic stream, congestion is incurred. As demand approaches capacity of a road (or of the intersections along the road) traffic congestion sets in. Several basic strategies may be combined to reduce traffic congestion. Congestion management is an approach that attempts to provide strategic alternatives to constructing more roads, by encouraging use of alternative routes, times, and modes of transportation through promotion, subsidies, or restrictions.

To reduce the need for physical improvements to the existing transportation network, it may be feasible to apply some congestion management practices to mitigate the impacts of development at the project site during the early phases of development. Past practices have often relied on adding road capacity to address traffic congestion. However, an alternative to an attempt to building more roads to solve peak hour congestion is to improve the efficiency of the existing transportation system. Possible congestion management measures are noted below:

#### *Strategic Shift Management*

To avoid congestion at peak travel times in the City of Centralia, at the time of individual tenants environmental review, it could be feasible for agreements to be made with the City so that employees' shifts at the project site are staggered to arrange travel time on existing transportation infrastructure so that impacts are found to be below the threshold for the need for physical improvements.

Alternative work hours at an industrial park on the project site can reduce trip demand on roadways by shifting work start and stop times to avoid peak roadway hours. From looking at previous employment data at and adjacent to the project site, it is anticipated that almost ½ of all the jobs at the site will be held by residents in and around Centralia and Chehalis, generating local trips.

#### *Alternative Community Routes*

It may be possible for employers to direct commuters to utilize routes to the project site that would avoid problem intersections and routes by publicizing alternative routes shown in this report and providing incentives to employees that follow these routes.

#### *Carpooling*

With almost 18% of Centralia residents reporting they carpoled to work, it may be more feasible for private industries to implement carpooling incentive programs as a means to mitigate impacts of employees on the existing transportation network.

- Carpool incentive programs may incorporate a variety of means to encourage employees to carpool. Possible incentives include reduced cost or free parking, preferred parking, or reward programs (such as prize drawings).
- Employers can help employees form carpools through rideshare matching. Rideshare matching helps potential carpoolers locate others nearby with similar schedules. Regional rideshare organizations in most areas allow interested employees to register directly for no cost. Employers can direct their employees to these free services.

- Employee benefits from carpooling include cost-sharing, less wear and tear on vehicles, time savings in regions with HOV lanes, and the ability to talk, eat, sleep, or read while commuting. The primary employer advantage is the need for fewer parking spaces; other advantages include less employee stress and improved productivity.

### *Monitoring*

Monitor complaints of any isolated stop sign controlled intersections in the County, if the community begins to experience excessive delay of congestion, it may be appropriate to construct turn lanes or to improve traffic control. Improvements such as all way stops or constructing a traffic signal system are types of improvements that are based on site specific needs and are not measures of overall function of the transportation system. The implementation of improvements can be address at the time of determination of impacts of specific tenants.

### *Alternative Freight Routes and Commuting*

Road space rationing is a means to avoid activities at the site from impacting the transportation network, restrictions can be placed upon roads as to prevent certain types of vehicles (such as freight) from driving on roads under circumstances where the impact would effect the Level of Service beyond the adopted Level of Service D.

Using roads that are already designated as freight routes (per the City of Centralia Comprehensive Plan), north bound freight leaving the project and freight coming to the project site from the north at peak travel times could be required to utilize the following route to avoid designated areas in the City where peak hour capacity has been documented: (1) Big Hanaford to Downing Road, (2) Downing Road to Pearl Street, (3) Pearl Street to Reynolds Road, (4) Reynolds Road to Harrison Avenue/Old Hwy 99, (5) Grand Mound Exit to I-5.

Freight traffic coming from the south will likely use the (1) Harrison Street Exit, then travel north on Harrison to Reynolds, (2) Reynolds to Peal Street, (3) Pearl to Downing, (4) Downing to Big Hanford, (5) Big Hanaford to project site. The capacity of this route and mobility of those traveling to and from the south will be improved upon completion of the Eckerson Road extension to Reynolds Road, currently on the City of Centralia six year Transportation Improvement Program. Depending upon transportation operations of industrial tenants at the project site, at peak hours Harrison Street could reach capacity without infrastructure improvements being made.

### ***Structural Alternatives***

#### *Eckerson Road to Reynolds Avenue Connection*

This alternative involves constructing a quarter mile extension of Eckerson Road to Reynolds Avenue allowing truck traffic coming from the project site to access I-5 without having to travel on the west side of I-5 in the City's retail corridor.

Traffic going to the project site from the south exiting on Harrison would be able to use this road, allowing traffic to avoid using Harrison Avenue to cross under I-5. This would not mitigate impacts of traffic traveling from the north to the project site, as they would still be required to exit on Harrison and travel through the congested commercial area on the west side of I-5. This traffic could be directed west and then north to Reynolds to cross under I-5.

With this improvement in place, trucks could travel from the project site along Big Hanaford Road then

south on Pearl Street, then west on Reynolds where they would then go south on Eckerson Road to Harrison Avenue where they can then travel north west to the I-5 north or south bound on-ramp. The development of Eckerson Road will require coordination efforts with the BNSF/UP rail.

The development of Eckerson Road to Reynolds Avenue is a project in the City of Centralia's capital improvement program. The City of Centralia's Comprehensive Plan, June 2007, Transportation Element, Attachment 2, *Existing Conditions Memorandum* provides a Cost Estimate Summary of the range of cost for the Eckerson Road to Reynolds Avenue at a conceptual design level, the range provided indicates this road extension will cost in a range from 11.4 million to 20.2 million dollars (6.22.2007).

### ***Smith and Blair Road Connection***

This alternative involves developing a 1 mile section of road located adjacent to I-5 on the east. By connecting this one mile road, traffic traveling on I-5 from the north to the project site can exit at Grand Mound and travel south to the 216<sup>th</sup> Street overpass that connects to Hobson Road/Smith Road S. If the 1 mile connection was developed, traffic could then travel south to Blair Road and on to Reynolds Road then to the project site. This connection would allow traffic traveling south on I-5 to circumvent the commercial area adjacent to I-5. The one mile road would require extensive earth work and would require work in a flood plain.

### ***North County Interchange***

As indicated in the previous discussion above, the feasibility study for the North County Interchange is currently underway; no information is available on when design would be completed and constructed or how the project would be funded. While the impacts of the North County Interchange on the existing transportation network associated with the project site have not been fully analyzed, they are anticipated to have a dramatic positive impact on the mobility of both freight and passenger vehicles on the existing transportation network and improve the capacity of components of the existing network.

## **Conclusion**

As development occurs at the project site, improvements to the transportation network will be required to facilitate traffic to and from the site. Congestion management practices can be used as a tool to help use existing capacity of the transportation network. Scheduled WSDOT project will help facilitate traffic to and from the site. As development progresses at the site, short links can be developed to route traffic around problem intersections that are found as a result of monitoring the networks capacity.

## Opinion of Probable Cost

Due to the complexity of the potential traffic mitigation and as other agencies will be involved and contributing to these projects, the costs assumed for these alternatives is a broad based estimate.

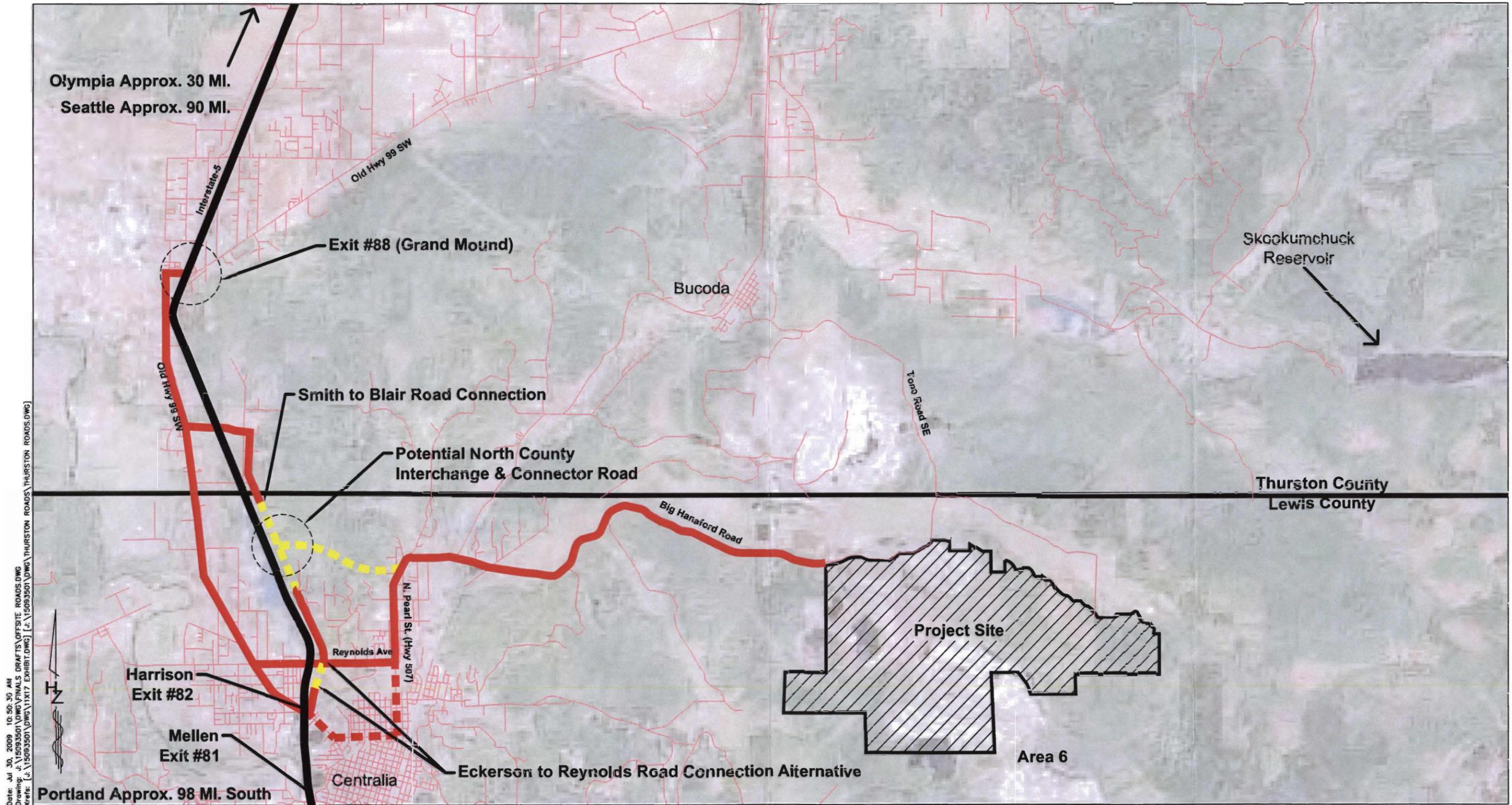
**Table 64 – Potential Off-Site Transportation Improvements**

Project	Cost
Congestion Management Practices	No Physical Improvements Required.
Eckerson Road to Reynolds Avenue Connection <sup>20</sup>	\$11.5 million to \$20. 5 million
Smith and Blair Road Connection	\$20 million to \$30 million
North County Interchange and local access road.	WSDOT has not published preliminary estimated cost.

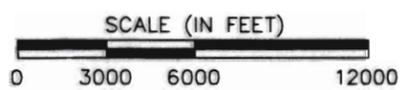
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<sup>20</sup> Centralia Comprehensive Plan, Transportation Element, Attachment 3. Cost Estimate Summary. June 2007.

**Exhibit 3. Off Site Road Alternatives**



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- Legend**
- EXISTING TRANSPORTATION ROUTES (ENCOURAGED USE)
  - - - EXISTING TRANSPORTATION ROUTES (DISCOURAGED USE)
  - - - POTENTIAL ROAD IMPROVEMENTS

Off-Site Roads Alternatives  
Exhibit 3  
2009

# On Site Rail Improvements

## Current Conditions

The TransAlta Centralia Operations facility adjacent to the industrial park is currently served with a dedicated rail spur that delivers coal to the facility (Exhibit 4 and Exhibit 5). Existing operations involve 1.5 trains arriving and being unloaded daily. Coal trains are unloaded continuously for approximately four hours and block the track during the unloading period. The existing TransAlta rail spur connects to the BNSF line, approximately 5 miles from the Centralia Operations facility providing an intertie to nationwide shipping routes via the BNSF.

The development of a reliable and accessible on-site rail system at the TransAlta site will relieve stress on the local, state, and federal road network. There are federal and state grants and other subsidy programs that provide for extremely low interest rate loans, (some with no interest) for the development of rail facilities. Parts of sites 1 through 3 have the potential to be leveled and accessed by rail. A cost for this option is included in the Earthwork section of Chapter 2-1.

## Potential Rail Service

Options for serving individual sites with on site rail facilities were evaluated. Grades in most of the project site are generally too steep for on-site rail access without major grading. Rail access to common use areas in the low areas between development sites was considered. This approach generated several options; (1) and (2) extending the TransAlta Spur to the edge of the industrial park with a short extension from the TransAlta coal unloading loop or (3) an extension that bypasses the coal unloading loop track and extends along the north edge of sites 1-3. All options discussed will require the approval of TransAlta Centralia Operations.

### ***OPTION 1 - SHORT EXTENSION FROM TRANSALTA SPUR TO AREA 1***

A short rail spur could be extended from the TransAlta coal loading loop to the edge of the new industrial sites. Industries would be required to transport freight to and from the rail spur using on-site roads. The new rail spur would be approximately 1,800 feet long from the eastern most point of the unloading loop to the industrial park.

Option 1 is the lowest cost of the options but has limitations on hours of operation. Hours of operation would be limited to times coal was not being unloaded at the TransAlta facility, (an average 6 hours per day under current operations).

### ***OPITON 2 - CONSTRUCT BYPASS SPUR NORTH OF THE TRANSALTA SPUR TO AREA 1***

A new rail spur could be constructed north of the TransAlta coal unloading loop, bypassing TransAlta's existing coal unloading loop. This rail spur would be approximately 7,800 feet long. Option 2 would allow freight to by-pass existing TransAlta coal unloading loop and would reduce the need for coordinating train movements between the trains serving the industrial users with the trains serving the power plant operations. The option is shown going to Area 1.

### ***OPTION 3 - EXTEND BYPASS SPUR ALONG SITES 1-3 AND CONSTRUCT A NORTH EDGE LOADING/UNLOADING AREA***

Option 3 includes extending a rail spur north of Areas 1-3. The rail spur could be located in flat area north

of Area 1 and Area 2 or extended in the abandoned TransAlta rail bed that is north of Area 3 and Area 4.

The spur(s) could also be designed to provide access to a shared sorting/off-load and on-load facility. Wetland mitigation measures may be required to facilitate this option. A rail car loading/unloading facility at the edge of the industrial park; under this option could occupy a 20 to 30 acre tract of land and include a crane or similar unloading facilities.

The advantage of this option is improved service to sites and a shared rail loading/unloading facility that can be used to attract users that depend on some rail access. Disadvantages of this option include potential wetland mitigation measures that may be required to facilitate the rail spur and loading/unloading area.

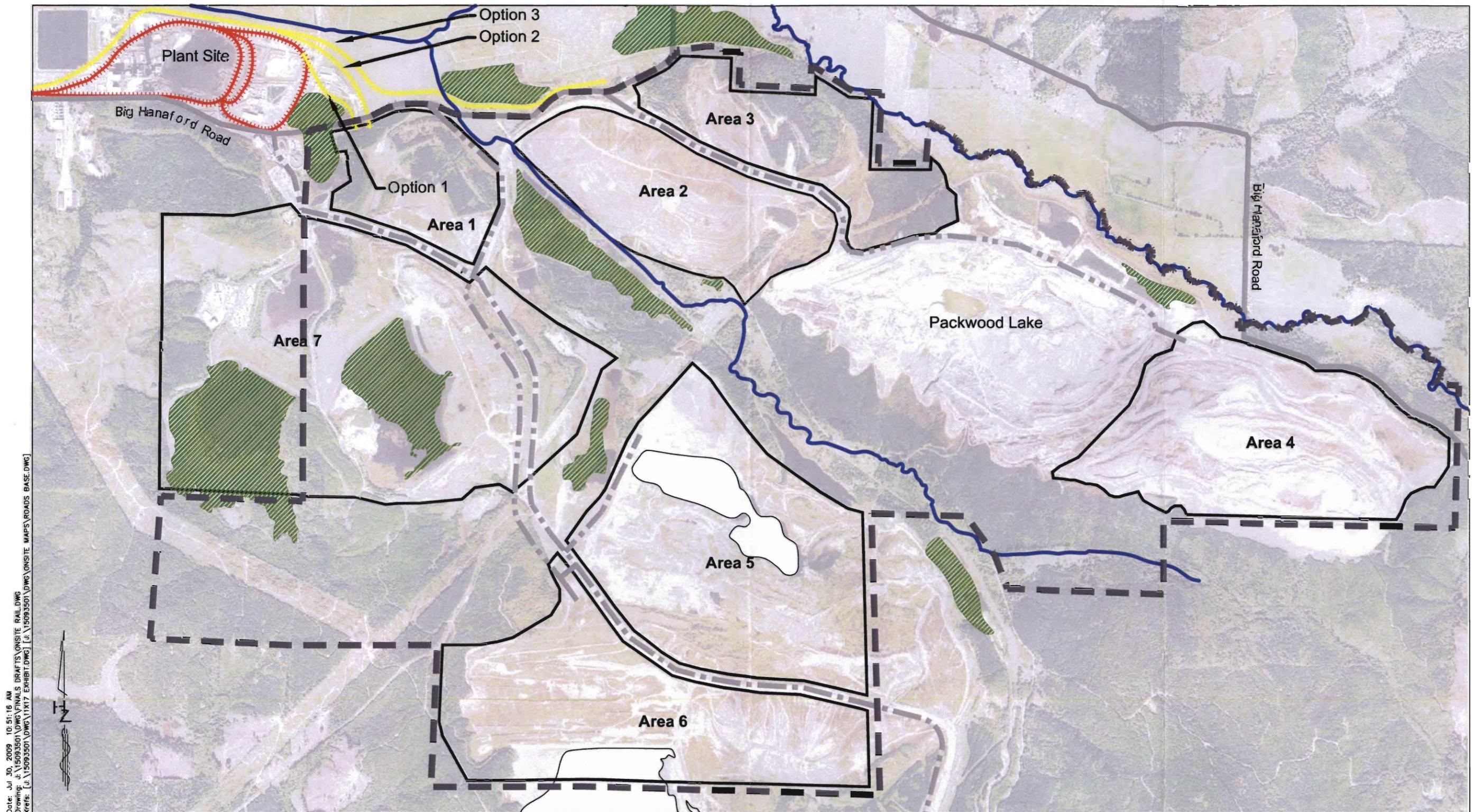
**Table 65 – Rail Improvements Opinion of Probable Cost**

Alternative	Rail Section	Linear Feet of Rail	Estimated Cost per unit		Estimated Cost		Comments
			Low	High	Low	High	
Option 1 - Short Spur	Short extension from TransAlta Spur	1,800	Low	High	Low	High	Alternative is interim solution.
			\$300	\$375	\$540,000	\$675,000	
Option 2 - Bypass Spur	Construct bypass spur north of TransAlta Spur to Area 1	7,800	\$300	\$375	\$2,340,000	\$2,925,000	Option by-passes loop to east and extends into Area 1
Option 3 - North Edge	Extend rail past sites 1-3 and construct a more substantial rail loading facility *	11,700	\$300	\$375	\$3,510,000	\$4,387,500 *	Substantial investment requiring long term commitment. (see additional costs for rail loading facility below)

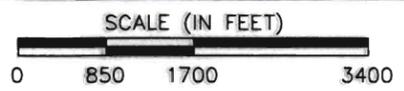
**\* Cost Associated with Rail Loading Facility Improvements**

- \$5,880,600 for 15 acre paved hard surface site development with storm drainage improvements (15 acres x \$400,000)
- \$750,000 for crane allowance
- Wetland mitigation costs (not estimated)
- Site leveling (not estimated)

## **Exhibit 4. On Site Rail Improvements**



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**Legend**

- PROPOSED RAILROAD
- EXISTING RAILROAD
- PROJECT SITE
- POST RECLAMATION WETLAND (APPROXIMATE)
- TO BE FILLED (POST RECLAMATION)
- MAIN HAUL ROAD
- PROPOSED INTERNAL INDUSTRIAL ROAD NETWORK
- BIG HANAFORD ROAD
- RIVER/CREEK

Option #	Linear Feet
1	1,800
2	7,800
3	11,700

**On-Site Rail Alternatives**  
**Exhibit 4**  
 2009

## Off Site Rail Improvements

### BACKGROUND

Burlington Northern/Union Pacific (BNSF) rail lines run adjacent to Big Hanaford Road. TransAlta Centralia Operations currently has a spur with three sidings off the BNSF line that brings coal to the facilities. Off site rail improvements can provide more flexibility to the existing rail network making the site more attractive for industries.

### Potential Improvements

Alternatives are discussed in the on-site improvements section that would extend the existing rail siding (TransAlta) to the project site. This section presents an alternative for rail service that minimizes the need to use tracks owned by TransAlta Centralia Operations. This option will require approval of TransAlta Centralia Operations.

There is an abandoned rail line north of the project site that once connected to the BNSF rail. Rehabilitating the abandoned line involves reinstalling tracks on this railroad grade to provide rail access to the proposed industrial sites. It is assumed that some wetlands exist on or around the abandoned rail line; no wetlands have been delineated or classified. This rail alternative involves crossing Big Hanaford Creek and a wetland that will be created as part of the mine reclamation process.

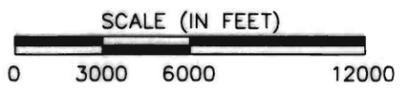
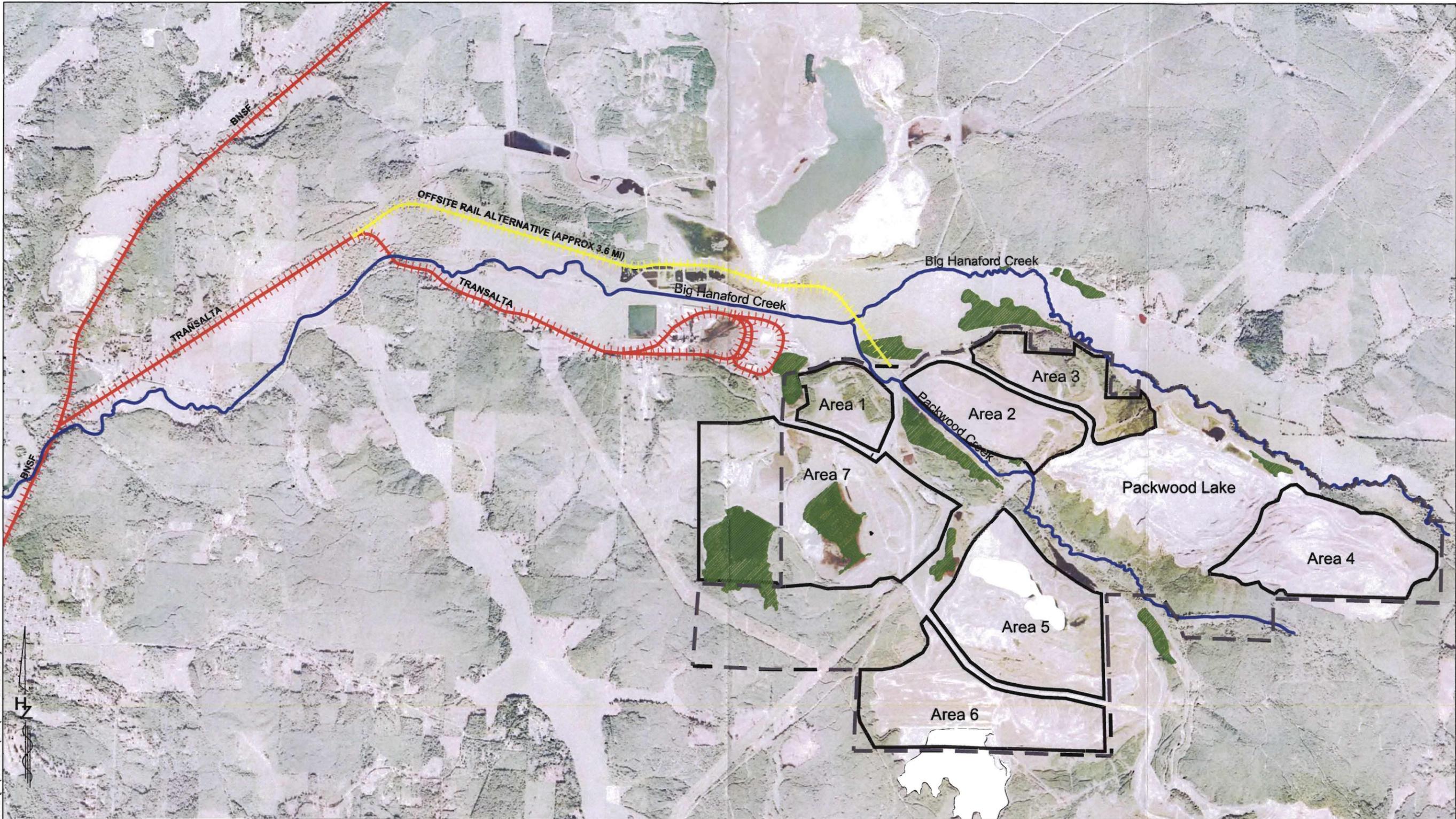
Approximately 19,000 linear feet of rail will be required to directly connect the site to the BNSF rail via the abandoned line. This alternative would have minimum conflict with TransAlta's rail operations, but if further wetlands are identified this alternative could require time for permitting and environmental review. The line has been abandoned for a substantial amount of time; upgrades to the rail bed will likely be required before it can be operational.

**Table 66 – Off Site Rail Opinion of Probable Cost**

Rail Section	Unit	Estimated Cost per Unit		Estimated Cost		Comments
		Low	High	Low	High	
BNSF Rail Connection	20,000 LF	\$300	\$375	\$6,000,000	\$7,500,000	Option would require a rail loop developed along with a load/unload facility.
Wetland Mitigation for the Rail Connection	14 acres	\$80,000	\$90,000	\$1,120,000	\$1,260,000	Wetlands have been previously identified in the general vicinity of the BNSF connection - wetlands have not been delineated or classified. The rail bed is shown going through a wetland that will be created as part of the reclamation process.
Stream Crossing and Mitigation	1 stream					The rail bed crosses Big Hanaford Creek, just north of the site.
<b>TOTAL</b>				<b>\$7,120,000</b>	<b>\$8,760,000</b>	

## Exhibit 5. Off Site Rail Improvements

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**Legend**

-  EXISTING SITE RAILWAY
-  PROPOSED RAIL LINE
-  PROJECT SITE
-  POST RECLAMATION WETLAND (APPROXIMATE)
-  RIVER/CREEK

Off-Site Rail Alternatives  
Exhibit 5  
2009

# **WATER SYSTEM IMPROVEMENTS**

Potable water can come from various sources, such as municipal water supply, water wells, rail or truck delivery, process water from creeks, streams, rivers, lakes, and re-use of graywater, rainwater, etc. The purpose of water system improvements at the project site is to deliver water to developments at the site, facilitating industrial development. This report Chapter is divided into the following sections:

- **On Site Water Supply and Distribution System**
- **Off Site Water Supply and Distribution System**

# On Site Water Supply and Distribution System

## Regulatory Conditions

Washington State maintains a set of laws and regulations that control the uses of water in the state (Chapter 90.54 RCW ). The water is “owned” by the State and the State allows use of the water by issuing water right permits to its citizens and businesses. The Lewis County Water Conservancy Board has been authorized by Ecology to administer changes to existing water rights. Changes require review and approval by the Lewis County Water Conservancy Board and State Department of Ecology.

The Skookumchuck Dam is a major element of a system that supplies water to the TransAlta Centralia Operations from the Skookumchuck River; this earth filled dam was constructed in 1970 to supply water to the Centralia Coal Plant in 1970 largely for heat removal at the energy facility and for “washing” coal (to remove non-coal material) prior to being used for energy. The mine has since suspended coal mining operations.

The City of Centralia operates the closest municipal water system. Connection to the Centralia system is assumed to be a viable option. The option of connecting to the Centralia water system, along with the cost for constructing a water transmission line to the project site from Centralia is explored in the off-site water improvements section of this report.

Two means identified to supply water to the project site, besides connecting into the City of Centralia’s system, include (1) an individual capital intensive industry developing their own well on their Area or (2) working with TransAlta to develop a mutual agreement along with the DOE to obtain use of water TransAlta has been granted.

Industrial tenants have a wide range of water needs; this is especially the case for their process water needs. It is fundamental to the initiation and continued growth of the water system serving the project site to have sufficient water to meet demands of capital intensive industrial tenants.

To meet water use during peak demand periods (such as for fire preparedness) may require use of storage, the basic quantity needed by a system’s consumers is what is needed over a maximum day demand period. A rare exception to this scenario would be when a system has multiple days of storage to provide peak day service when its sources cannot meet the maximum day demand period on their own. For reliability purposes, the Department of Health recommends developing source capacity such that it is able to replenish depleted fire suppression storage with a 72 hour period while concurrently supplying the maximum daily demand.

### **Water Wells**

The State maintains a set of regulations (WAC 173-160) that stipulate the qualifications for well drillers, and the design standards for well drilling and abandonment. Individual industrial tenants within the project site may use wells for water supply and would therefore be subject to these regulations.

Permits for water withdrawal from wells are issued by the Department of Ecology. In 2005, the Washington Attorney General’s Office issued a formal opinion clarifying four types of groundwater uses exempt from state water right permitting requirements. Water for industrial purposes, including irrigation, limited to 5,000 gallons per day (no acre limit) is a use that is exempt from state water right permitting requirements.

All wells for a given project apply toward the limits of the exemption. If the industrial tract is developed and the water is supplied from a well, all the wells for that development cannot exceed the 5,000 gallon a day limit.

Although exempt groundwater withdrawals do not require a water right, they are always subject to state water law. In some cases, the DOE will place conditions on groundwater withdrawals when they interfere with prior, "senior" water rights. State laws establish minimum well construction standards and require public water systems to be routinely tested for contaminants. The Washington State Department of Health (DOH), Drinking Water Division regulated the quality of drinking water. The quality of industrial well water for industrial processes is not specifically regulated, but the DOH has rigorous requirements for prevention of cross connections between potable and non-potable water systems.

### **TransAlta's Water Certificates/Permits**

The Washington Department of Ecology's 2001 Water Right Application Tracking System (WRAT) indicates that TransAlta has water rights for use of approximately 142,189,714 GPD of water (Certificate/Permit No. S2-25872 and R2-11862). The source of TransAlta's water is the Skookumchuck River (surface water of the State). Approximately 64% of these water rights are for non-consumptive hydroelectric power generation.

The *Chehalis Basin Partnership, 2003 Chehalis Basin Water Quality Evaluation*, October 2003 states:

Certificate S2-25872 is for non-consumptive use of 140 cfs (90,484,364 GPD) for hydroelectric power from the Skookumchuck Reservoir, at a dam on the Skookumchuck River approximately 15 miles northeast of Centralia. The 140 cfs with an elevation drop of 110 feet represents a small generation capacity with a theoretical power output of about 1,750 hp [1.3 megawatts (MW)], although the permit proposed a generator rated at 1,300 hp (0.97 MW) The power output feeds into the existing electrical grid. The maximum 1.3 MW output would be sufficient to power about 54 homes without electric heat, or about 27 homes with electric heat.

The 2003 *Chehalis Basin Water Quality Evaluation* goes on to state:

The second certificate (R2-11862, November 28, 1966; the "R" prefix indicates a reservoir water right) is for reservoir construction and consumptive use of 80 cfs (51,705,350 GPD) from the Skookumchuck River to make up losses from steam generation and water circulation at the Centralia coal-fired power plant at Big Hanaford Road, northeast of Centralia. The permitted storage of the Skookumchuck Reservoir is 35,000 acre feet. The existing Centralia power plant is a coal-fired plant with two generating units, with a total power capacity of 1,340 MW. A new gas-fired plant is planned, which would add 248 MW to the total plant capacity. The power plant has recently come under the ownership of TransAlta...

The point of withdrawal of the 80 cfs under certificate R2-11862 is 13.3 miles downstream of the Skookumchuck Reservoir. The water is pumped to the Centralia Power Plant for storage and use; return water reenters the Skookumchuck River by way of Hanaford Creek. The point of return is 3.2 miles downstream of the point of withdrawal. The amount of return flow is unknown. The annual volume limit on this right is 35,000 acre-feet, equivalent to a continuous year-round withdrawal rate of 48 cfs, about 60 percent of the allocated instantaneous withdrawal rate.

Under a private agreement between Pacific Power and Light and the City of Centralia related to certificate R2-11862, the City may claim a withdrawal rate of 3.1 cfs (2,003,582 GPD) with written notice and a 1-year waiting period. In its October 18, 1995 letter, Ecology explored possibilities for formalizing the City's claim, but resolution of the issue has not been documented.

**Table 67 – TransAlta Water Rights Listed in DOE WRATS Database**

Sub basin Number	Certificate or Permit Number	Holder of Right	Date	Allocated Withdrawal (CFS)	Allocated Consumptive Withdrawal	Purpose	Permitted Storage Volume (acre-feet)	Water Source
10	S2-25872	TransAlta <sup>21</sup>	4/3/81	140	-	Power	-	Skookumchuck
10	R2-11862	TransAlta	11/28/66	80	80	Power, Commercial and Industrial	35	Skookumchuck

Source: Chehalis Basin Partnership 2003 Chehalis Base Water Quantity Evaluation

## Anticipated Domestic Water Needs

The DOE Criteria for Sewage Works Design provides estimates for typical planning level domestic water sewage flows at capital intensive industries, yielding a reasonable forecast of the domestic water needed by a capital intensive industrial tenant at the project site.

**Table 68 – Estimated Domestic Water Needs for Industrial Users (DOE)**

Consumption/Discharge Facility	Design Units	Flow (GPD)
Factory	per person	15

Source: August 2001 DOH Water System Design Manual

- Estimates for employees per acre are assumed at 2.2 persons per acre.
- The minimum lot size at the project site is 100 acres.
- There are 1,000 acres that have been targeted for capital intensive development at the project site.

<sup>21</sup> The Chehalis Basin Partnership 2003, Chehalis Basin Water Quantity Evaluation indicates that the Holder of the Right is Pacific Power and Light. The holder of the right has changed since the publication of the report, Table 53 documents the current holder of the water right.

**Table 69 – Forecasted Domestic Water Needs**

<b>Domestic Water Need Estimate (GPD) per Employee</b>	<b>Employees per 140- Acre Tract (2.2 employees per acre)</b>	<b>Forecasted Domestic Water needs on 140-Acre Tract (GPD)</b>
15	308	4,620
<b>Domestic Water Need Estimate (GPD) per Employee</b>	<b>Employees Forecasted at Project Site</b>	<b>Forecasted Domestic Water needs at Project Site (GPD)</b>
15	2,200	33,000

A capital intensive use with approximately 308 employees on a 140 acre site is forecasted to need 4,620 GPD of potable water for domestic purposes. The 1,000 acres targeted for development at the project site is anticipated to need 33,000 GPD of potable water.

Rates of domestic water use will vary widely depending on specific users and hours of production. In addition to the domestic water needs forecasted, industrial uses will require fire flow storage on site and water for industrial processes.

## **Anticipated Industrial Process Water Needs**

Water use at industrial developments varies dramatically among the diverse range of capital intensive industries. Lewis County water and sewer plans have not documented estimated water use for capital intensive industrial developments. The City of Camas Wastewater Facility Plan, in neighboring Clark County, estimates wastewater volumes at 1,500 gallons per acre per day for “dry” types of industry such as simple assembly and 2,500 gallons per acre per day for “wet” types of industry involving more complex fabrication processes.

**Table 70 – Forecasted Pre Treated Industrial Sewage Flows at Industrial Park on Project Site**

<b>Planning Level</b>	<b>Gallons per acre per day (GPAPD)</b>	<b>Average Lot Size (Acre)</b>	<b>Total Daily Flow (Gallons per Day)</b>
Baseline Flow per 140 acre site	1,500	140	210,000
<b>Planning Level</b>	<b>Gallons per acre per day (GPAPD)</b>	<b>Acres Targeted for Development at the Site</b>	<b>Total Daily Flow (Gallons per Day)</b>
Baseline Flow for project site	1,500	1,000	1,500,000

## **Potential Service Options**

This section of the feasibility study explores options identified to serve capital intensive users at the project site with water.

## **Water Wells**

If a capital intensive use is forecasted to have a low water use (primarily for domestic use), under 5,000 GPD, it may be a feasible for the development to use an on-site low volume water well without new water rights.

- Low volume water wells may not be suitable for all areas at the project site.
- It is not likely that water needed for domestic, industrial processes, and fire suppression for all development areas at the site can be generated entirely by low volume on-site wells.
- It is anticipated that most of the capital intensive industries at the project site will need more water for industrial process purposes than can be produced by a 5,000 GPD water well.

## **Connect to TransAlta Centralia Operations' Water Source**

Water, on an interim basis, for a capital intensive industrial tenant sited at the project site may be able to utilize waters granted to TransAlta for coal processing purposes. An agreement between TransAlta and a potential developer would be necessary. DOE approval of the change in water use will be required. Connecting to the TransAlta system has the advantage of low initial cost, but this approach has the disadvantage of uncertainty with respect to the probability of obtaining permits and quantities that may ultimately be temporary, reducing marketability of the project.

As indicated in the previous section TransAlta's Water Certificates/Permits, under a private agreement between Pacific Power and Light and the City of Centralia related to certificate R2-11862, the City may claim a withdrawal rate of 3.1 cfs (2,003,582 GPD) with written notice and a 1-year waiting period. In its October 18, 1995 letter, Ecology explored possibilities for formalizing the City's claim, but resolution of the issue has not been documented.

If an agreement was formalized under the general terms above, it may be feasible for the project site to obtain its full water needs from a direct connection to the TransAlta Centralia Operations water system. The withdrawal rate of 3,1 cfs (2,003,582 GPD) slightly exceeds the forecasted amount of water needed to facilitate operations at the project site.

Under this option, the TransAlta water treatment facilities would likely need to be expanded. The cost of a treatment system will vary depending on water quality and quantities needed for potable water. For budgetary purposes a cost of \$4 to 12 million dollars is suggested for a 1.5 MGD filtration plant<sup>22</sup>.

## **OTHER OPTIONS - RE-USE**

Washington State recently developed regulations defining different types of wastewater and what it can, and cannot, be used for (Water Reclamation and Reuse Standards, 1997). Industries located at the project site may choose to reclaim wastewater and may therefore be subject to these regulations. The

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<sup>22</sup> Cost Estimating Guide for Water, Wastewater, Roads, and Buildings. New Mexico Environmental Finance Center. June 2007 and Texas Region H Water Planning Group. 2006 Regional Water Plan. Appendix 4C were used to arrive at this opinion of probable cost.

reclamation and reuse of domestic wastewater could provide water volumes that could reduce the need for potable water.

### ***Re-use TransAlta Industrial Operations Water***

Re-use cooling water (industrial process water - consumptive withdrawal) from TransAlta Centralia Operations. Some capital intensive users that may be able to utilize heated not-potable water for industrial or commercial processes.

### ***Re-Use Treated Wastewater from Industrial Operations***

Re-using the treated water from a sanitary sewer treatment plant may be appropriate for some users that can utilize not-potable treated water for industrial or commercial processes.

Re-using water from other industries that develop at the site may also be a feasible concept. This concept is well suited for capital intensive industries since a lot of industries have large cooling or process water demand and the water often does not need to be potable water quality. Reclaimed water can also be used for irrigation, fire safety supply, wetland recharge, landscape impoundments, fountains, boiler feed, and as an additive to some production materials such as concrete.

One impediment to overcome with wastewater reuse is what to do with the water when it is not needed due to seasonal or production factors. For example, there is no need for irrigation during a large part of the year. Of all of the reuse options, those that are not weather dependent have the best chance of being implemented. Most industrial water applications require only secondary treatment of effluent; it is possible that a large wet industry could reuse all sewer generated by the entire industrial complex.

## **On Site Conveyance**

To move water internally from a source will require an on-site distribution system. The conveyance system shown on Exhibit 6 demonstrates a conceptual water plan consisting of 18" water mains. The individual industries are assumed to tie into the main line at the time of development.

Final water system main sizing will consider a number of factors including pumping costs, system demand, friction losses, and flow velocities. The factors and their relative influences in the selection of optimum piping arrangement should be recognized. The transmission lines serving the project site will need to be designed so that, in combination, they will optimize the water system and at a minimum, provide for the demand conditions at pressures established by the State in WAC 246-290-230.

The assumption in this report is that an 18" main will be adequate to serve the site at the time of build out, but it is expected that the design of the main will be determined by a hydraulic analysis at the time of system design. Since development will not occur all at once, and the required flow rate is anticipated to increase over time as industries develop at the site, it may be desirable to install a larger line or two lines to accommodate water conveyance so that flows can be efficiently carried in an appropriate sized pipe during early phases of development. A two line system can also be used to convey different types of water, i.e. potable, process, and reclaimed.

Avoiding multiple crossings of Packwood Creek was a consideration in planning the alignment of the line. The development of the water conveyance system is recommended to be developed in phases concurrently with the roads network.

- Service to Development Areas 1, 2, and 3 will require approximately 5,600 linear feet of 18" water

line.

- Service to Development Area 4 will require an additional approximately 11,400 linear feet of 18” water line to be extended from the line serving Area 1, 2, and 3.
- Service to development tracts 5, 6, and 7 will require 9,100 linear feet of 18” water line.

**Table 71 – Water Distribution System Opinion of Probable Costs**

Area Served	Water Line Segment	Conceptual Plans	Estimated Cost per Unit		Estimated Cost	
			Low	High	Low	High
1, 2, and 3  For crossing of Packwood Creek we have assumed an additional cost for 40 linear feet	A	5,600 LF of 18” line	\$175 LF	\$250 LF	\$980,000	\$1,400,000
		40 LF of 18” Line	\$350 LF	\$450 LF	\$14,000	\$18,000
					\$994,000	\$1,418,000
1, 2 and 3	A	500,000 Gallon Water Tank	\$3,000,000 Each	\$4,000,000 Each	\$3,000,000	\$4,000,000
7	B	2,500 LF of 18” line	\$175 LF	\$250 LF	\$437,500	\$625,000
5 and 6	C	6,600 LF of 18” line	\$175 LF	\$250 LF	\$1,190,000	\$1,700,000
4	D	11,400 LF of 18” line	\$175 LF	\$250 LF	\$1,925,000	\$2,750,000
5, 6, and 7	B,C, and D	500,000 Gallon Water Tank	\$3,000,000 Each	\$4,000,000 Each	\$3,000,000	\$4,000,000

**Water Distribution System Opinion of Probable Costs Assumptions:**

- Water line is installed in the road shoulder alignment
- No special materials are required for water conveyance system (pipe systems developed in soils highly susceptible to liquefaction, require special considerations to the type of materials used).
- It may be possible to reduce the size of the lines serving Areas 4, 5, and 6 to 12” mains; in developing our opinion of probable cost they have been shown as 18”.

**Fire (Suppression) Flow**

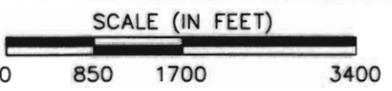
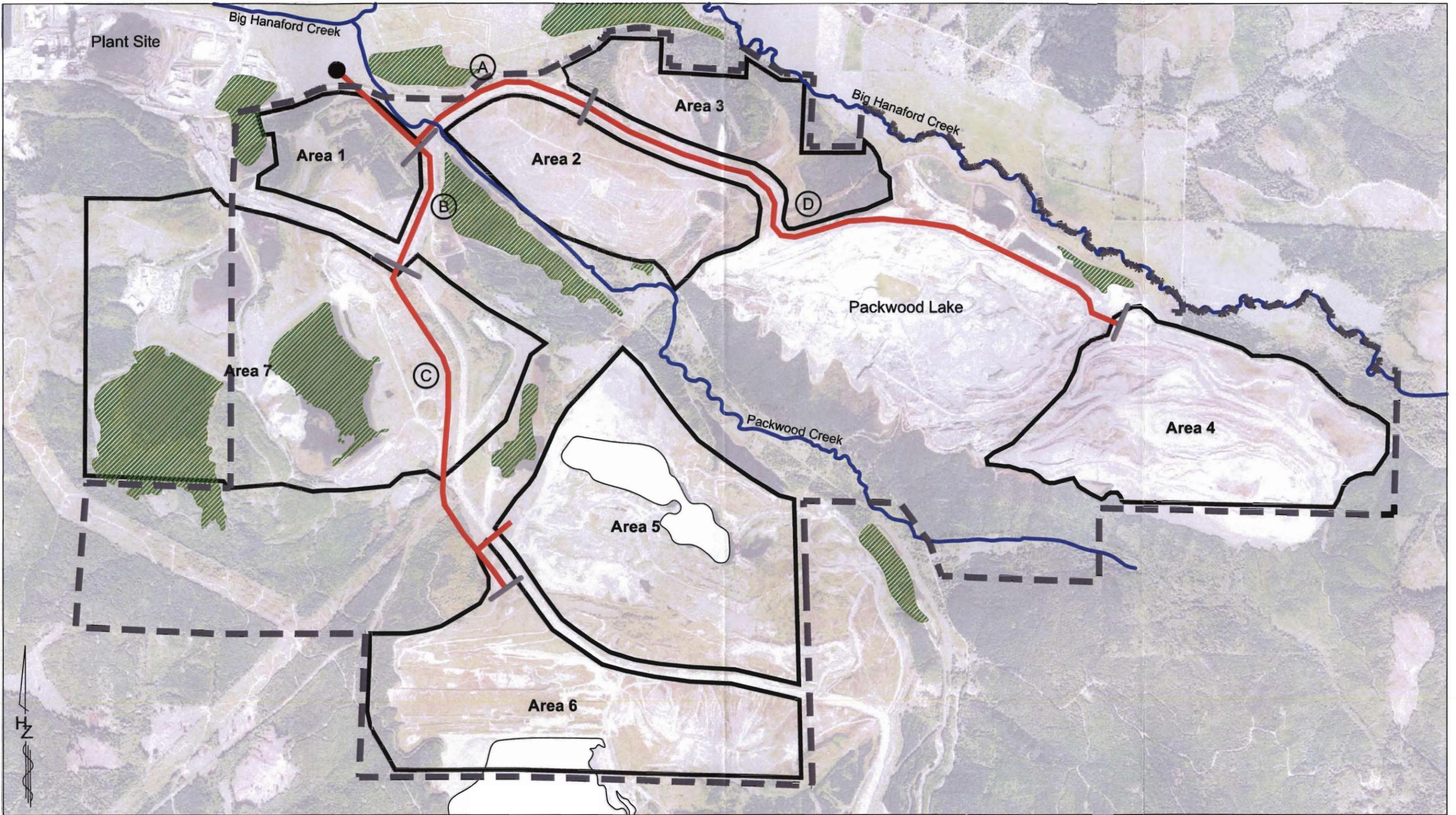
There are other reasons, in addition to assuring public safety, why providing adequate fire flow to the an industrial park at the project site is so important. The water system’s capability to provide fire flow is one of the main criteria used to establish the insurance rating. The ratings (“one” is very good to “ten” is very bad) are used by the insurance industry to estimate the relative fire risk and set local insurance rates accordingly. Fire insurance premiums are lower for businesses located in fire protection municipalities or

districts that have earned a better rating. The insurance rating of a local district is based upon a variety of criteria distributed among three key components. Ten percent (10%) of the rating is based upon the "911" center's ability to answer and dispatch calls, forty percent (40%) is based upon the fire department itself, and fifty percent (50%) is based upon the reliability of the water system and its ability to provide required fire flows. In Washington State, this national rating system is administered by the Washington Surveying and Rating Bureau, located in Seattle, Washington.

The major industries will likely need to develop their own fire protection specific to their needs, outside of any agreements with Lewis County or The City of Centralia. To provide fire flow at the site a one million gallon tank is assumed at a cost of \$6 million to \$8 million; this is shown as two 500,000 gallon tanks in the opinion of probable costs to facilitate phasing and service to the two "branches" of the water system.

**Exhibit 6. On Site Water**

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**Legend**

- PROPOSED WATER MAIN
- RIVER/CREEK
- PROJECT SITE
- WATER MAIN CONNECTION (SOURCE TBD)
- WATER LINE SECTION/PHASES
- POST RECLAMATION WETLAND (APPROXIMATE)
- TO BE FILLED (POST RECLAMATION)

Segment	Linear Feet
(A)	5,600
(B)	2,500
(C)	6,600
(D)	11,400

**On-Site Water Alternatives**  
**Exhibit 6**  
 2009

## Off Site Water

Options for providing the project site with water from an off site source are discussed in this section. Discussion of options to use on-site sources such as water from the TransAlta Centralia Operations or wells has been discussed in the report section describing on-site water systems.

Potential water supply includes working with the City of Centralia and making improvements to the TransAlta infrastructure. Centralia’s water system is assumed to have adequate capacity to provide flows to the project site. Centralia’s water source is groundwater from seven wells; in addition the City has surface water rights on the North Fork Newaukum River and five additional inactive wells. The Newaukum river intake is not used due to its status as an unfiltered surface water source which can not presently meet the Surface Water Treatment Rule (SWTR). However, the transmission line from Newaukum source and associated property along the alignment is still maintained for potential future use.

TransAlta Centralia Operations withdraws water from the Skookumchuck River. TransAlta controls outflow of the dam to accommodate withdrawal from the River.

The City of Centralia’s Comprehensive Plan recognized that the majority of growth is to be expected outside of the City Limits and within higher elevation pressure zones. As such, the City recognizes that pump station upgrades and transmission main extensions are needed in areas such as the Davis Hill (east of I-5 and North of Reynolds Avenue) to support future water demand growth. Currently the City has proposed a storage reservoir on Davis Hill Road (250,000 gallons).

- Elevation of point of connection at TransAlta = 220 feet above sea level
- Elevation of City of Centralia = 145 feet above sea level

## Potential Development Options

Options explored for supplying the project site with water from an off site source are: (1) use of a portion of TransAlta water rights, (2) connect to City of Centralia system, (3) increased surface water withdrawals from the Skookumchuck River or a tributary, and (4) legislative action.

**Table 72 – Forecasted Domestic Water Needs**

<b>Domestic Water Need Estimate (GPD) per Employee</b>	<b>2.2 Employees an Acre on an 140 Acre Tract</b>	<b>Forecasted Domestic Water Need on 100 Acre Site</b>
15	308	4,620
<b>Domestic Water Need Estimate (GPD) per Employee</b>	<b>2.2 Employees an Acre on an 1,000 Acres Targeted for Development</b>	<b>Forecasted Domestic Water Need on 1,000 Acres Targeted for Development</b>
15	2,200	33,000

**Table 73 – Forecasted Pre Treated Industrial Water Needs at TransAlta Industrial Park**

<b>Planning Level</b>	<b>Gallons per acre per day (GPAPD)</b>	<b>Average Lot Size (Acre)</b>	<b>Total Daily Flow (Gallons per Day)</b>
Baseline Flow	1,500	140	210,000
<b>Planning Level</b>	<b>Gallons per acre per day (GPAPD)</b>	<b>Acres Targeted for Development at the Site</b>	<b>Total Daily Flow (Gallons per Day)</b>
Baseline Flow	1,500	1,000	1,500,000

***CONNECT TO CITY OF CENTRALIA WATER INFRASTRUCTURE***

This option requires a commitment from the City of Centralia to supply water to the project site. It appears feasible to develop a water line from the City of Centralia existing water system to the project site. Two possible connection points for an 18” water main have been identified (Exhibit 7).

Alternative 1 is shown extending approximately 28,000 linear feet from the site along Big Hanaford Road and connecting to the City of Centralia near Downing Road and Pearl Street. Centralia Public Works has indicated that the connection point is only a 6” line; major upgrades to existing City water mains are likely required to make this option feasible. Alternative 1 would require that the line cross a rail line, three creeks, and possibly wetlands which effect the cost of development.

Alternative 2 is shown extending from the south part of the project site approximately 15,500 linear feet through an existing utility corridor and then connecting to a line that is adjacent to Little Hanaford Road (south of the project site). The line was previously used by the City as an intake pipe to supply surface water for potable water, but the main is now used by the City for conveyance. The line is made of transite material and may require some maintenance work to be used for conveyance of water to the site.

- If alternative 2 is used to convey potable water to the site, the 18” transite line will need to be modeled for capacity and its ability to convey water to the project site. The model should provide documentation on how many acres or development areas could be served with no improvements to the line.
- Phased replacement to the 18” transite main may be required by the City.
- A pump station will probably be needed to convey water from the connection with the transite pipe to the project site.

For the City to supply the project site with water will require approval from the Department of Health.

**Table 74 Water Line Alternatives**

Water Line Alternative	Unit (LF)	Estimated Cost per Unit (LF)		Estimated Cost		Comments
		Low	High	Low	High	
Northern Line - Alternative 1	28,175 LF	\$450	\$575	\$12,678,750	\$16,200,625	Some upgrades to the City's system leading up to the connection may be required.
Southern Line - Alternative 2	15,500 LF	\$200	\$350	\$3,100,000	\$5,425,000	Some upgrades to the City's system may be required to connect to the 18" transite pipe and a pump station may be required to convey the water to the project site.

\* Assume no right of way acquisition required and no part of the main is within a sensitive area.

The 18" City water main is made of transite which can become brittle and subject to breaks as it ages. Many segments of the line are likely in average to poor condition; the City has documented some previous issues with the line. Conditions of the aging line may not support higher pressure and flows needed to serve the project site without improvements. Testing of the line is recommended and a plan to phase replacement of the 18" City line leading to the new connection may be needed if this option is pursued.

***INCREASE WATER WITHDRAWAL FROM THE SKOOKUMCHUCK RIVER OR TRIBUTARIES***

Increase the water withdrawals supplied by the Skookumchuck Dam. This proposal requires some combination of the following actions:

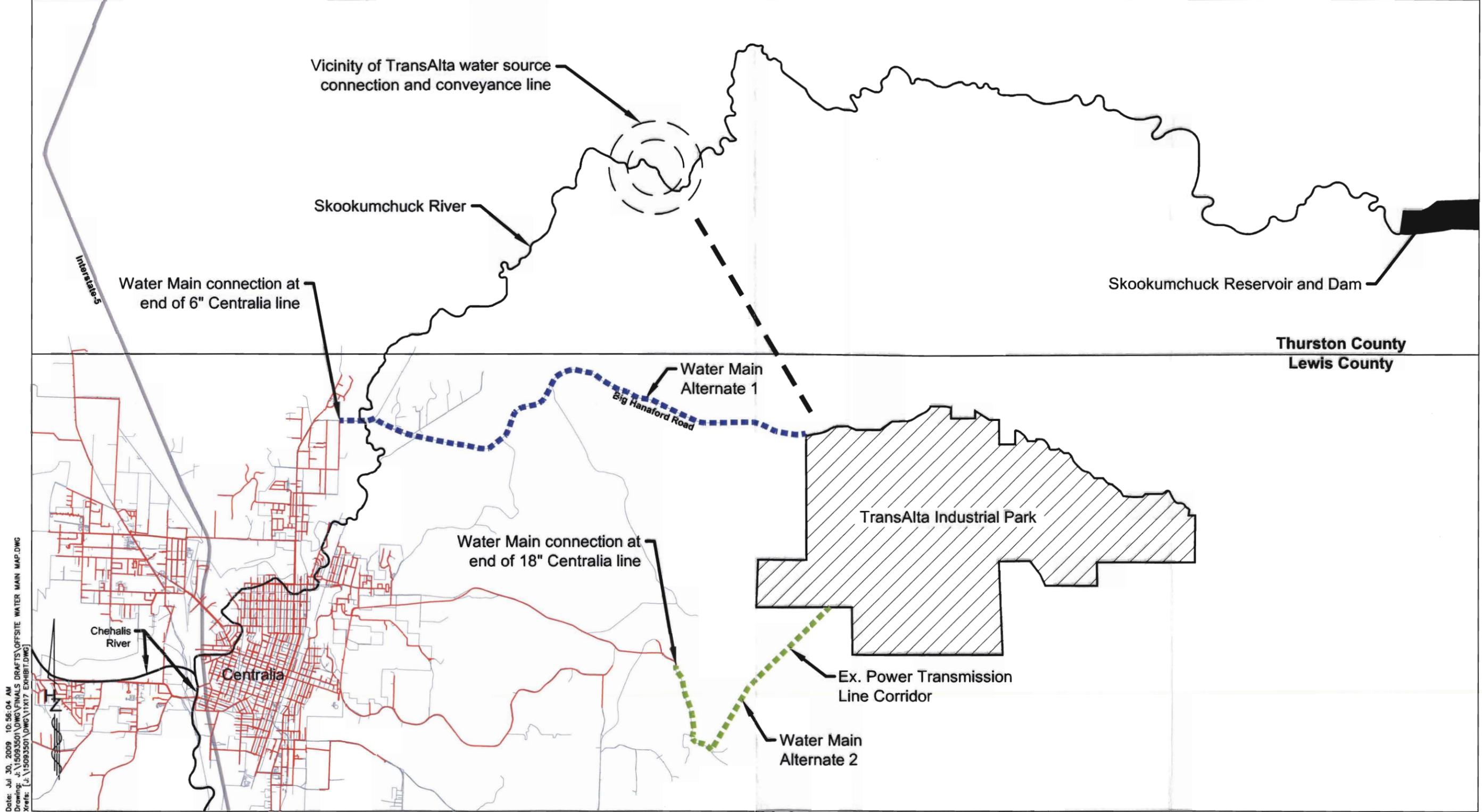
- Increase water rights.
- Raise the Skookumchuck Dam
- Develop a new dam on a tributary of the Skookumchuck
- Construct an intertie to the city of Centralia.

If a substantial quantity of water is made available at the site, this could expand the potential client base. An expanded dam could have multipurpose benefits such as reduce flooding, improving fisheries habitat, and securing additional water source for the City of Centralia. The Corps of Engineers has recently study alterations to the Skookumchuck Dam to address flooding. Increasing the water withdrawal from the Skookumchuck would require substantial time to complete environmental review and coordination efforts with Federal, State, Local, and Tribal groups.

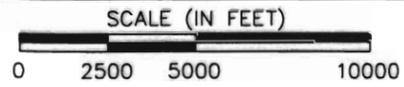
***LEGISLATIVE ACTION***

Work with the State to increase the water rights to serve the facility. This alternative would allow those industries at the project site to have the opportunity to remain connected to the existing water distribution system, with minimal improvements, at the TransAlta Centralia Operations. This option will require the cooperation of the Department of Ecology, Local, Tribal and State authorities.

## Exhibit 7. Off Site Water Improvement



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- Legend**
- - - - - WATER MAIN EXTENSION ALTERNATE 1
  - - - - - WATER MAIN EXTENSION ALTERNATE 2
  - - - - - EXISTING CITY WATER MAINS
  - - - - - TRANSALTA WATER CONVEYANCE LINE (VICINITY)
  - - - - - EXISTING ROADS

Water Segment	Linear Feet
Water Main Extension Alternate 1	28,200
Water Main Extension Alternate 2	15,500

**Off-Site Water Alternatives**  
**Exhibit 7**  
 2009

# SEWER SYSTEM IMPROVEMENTS

A sewer system is a type of underground system for transporting waste from the project site to an area for treatment of water and disposal of solids. While the storm water drainage infrastructure acts independently from the sanitary sewer system, it has been included in this chapter for discussion.

This report Chapter is divided into the following sections:

- **On Site Sanitary Sewer**
- **Off Site Sanitary Sewer**
- **On-Site Storm Water Drainage**

## On Site Sewer

There are primarily two types of waste that will need to be treated and possibly discharged (1) **industrial process wastewater** and (2) **domestic wastewater**.

The City of Centralia operates the closest municipal wastewater treatment plant. Centralia Public Works indicated that the new wastewater treatment facility, located northwest of the City's UGA boundary adjacent to the Chehalis River:

- processes, on annual, an average of 2.3 million gallons a day (MGD) of wastewater.
- there are days when the amount of wastewater conveyed to the facility is as low as 1.2 MGD and others that are as high as 6 MGD
  - the large discrepancy between the reported low and high is caused by heavy rains and floods when storm water infiltrated into the City's sanitary sewer system.
- the treatment facility has the capacity to treat a peak high flow of 10 MGD

A connection to the Centralia system is assumed to be a viable option. Costs for constructing a sewer conveyance line to this facility are discussed in the off-site sewer improvements section of this report.

The TransAlta Centralia Operations operates a waste water treatment plant for domestic water from employees. This system is assumed to have excess capacity. The *Lewis County Prime Industrial Lands Study*, February 1999 indicates that the TransAlta domestic facility has a capacity of 20,000 gallons per day with typical use averaging 13,000 GPD. These figures are for volumes during mine operations, the typical use is expected to be lower now.

TransAlta has an NPDES permit that allows up to 10 million gallons of water per day to be discharged to surface waters. Average discharge in 1999 was 2.5 million GPD primarily in runoff. Following cessation of mine activities, average discharge is expected to be lower. A new NPDES permit would be required to discharge additional treated wastewaters into the environment. NPDES permits contain limits on what can be discharged and monitoring and reporting requirements, along with other provisions to ensure that the discharge does not impact water quality or people's health.

The project site will have two potential wastewater streams of different characteristics (1) industrial process wastewater and (2) domestic wastewater. Industrial wastewater can include constituents from an industrial system (i.e. volatile chemicals, heavy metals, machinery lubricants, etc.), sometime requiring special pre-treatment for certain constituents. Domestic wastewater contains constituents found in average residential sanitary sewers without industrial components.

### **INDUSTRIAL PROCESS WASTEWATER**

Table 74 provides planning level estimates of the amount of industrial process waste water potentially generated by capital intensive uses at the project site. The use of water and the amount of industrial process waste water generated by industrial development varies a great deal. Wastewater system planning will have to be coordinated between potential tenants, the entity managing the Industrial Park at the project site, the DOE and DOH, and any municipality that agrees to provide service to the project site.

The baseline amount of industrial process waste water forecasted to be generated from industrial developments on the 1,000 acres targeted for capital intensive industrial development is assumed to be

1.5 million gallons per day (GPD),

**Table 75 – Forecasted Pre Treated Industrial Process Water Flows**

Planning Level	Gallons per acre per day (GPAPD)	Average Lot Size (Acre)	Total Daily Flow (GPD) per 140-Acre Development Area
Baseline Flow	1,500	140	210,000
Planning Level	Gallons per acre per day (GPAPD)	Acres Targeted for Development at the Site	Total Daily Flow (GPD) for Project Site
Baseline Flow	1,500	1,000	1,500,000

**DOMESTIC WASTEWATER**

The Department of Ecology (DOE) *Criteria for Sewage Works Design* indicates the approximate domestic waste produced per person at a capital intensive industry would be 15 GPD. A typical site at the project site is assumed to be approximately 140 acres, and assuming the industry at the site will accommodate 2.2 employees per acre, there will be approximately **4,620 gallons** of domestic wastewater produced per day on a 140 acre site.

**Table 76 – Forecasted Domestic Sewer Flows**

Domestic Water Need Estimate (GPD) per Employee	2.2 Employees an Acre on an 140 Acre Tract	Forecasted Domestic Water Need on 100 Acre Site
15	308	4,620
Domestic Water Need Estimate (GPD) per Employee	2.2 Employees an Acre on an 1,000 Acres Targeted for Development	Forecasted Domestic Water Need on 1,000 Acres Targeted for Development
15	2,200	33,000

**Potential Service Options**

**INDUSTRIAL PROCESS WASTEWATER**

Treatment of industrial process wastewater is required when water has been contaminated by industrial or commercial activities prior to its release in the environment. Different types of contamination of waste water require a variety of treatment methods.

Depending on the type of industrial wastewater and the pretreatment applied to it, the wastewater could be reused, discharged through drain fields or possibly underground injection, or conveyed to the City of Centralia’s sewer conveyance system. Treatment, possible reuse, and disposal of industrial wastewater will be required to conform to State law in addition to Lewis County regulations (WAC 173-216)

Individual sites may need to develop on-site pre-treatment systems for wastewater prior to it being discharged into any domestic sewer system connection. The Department of Health and the DOE have the responsibility for sewer systems exceeding 3,500 GPD.

Waste water facilities are sometimes provided by individual capital intensive industry that requires treatment. In some cases a specialized pre-treatment or treatment facility for a group of similar industries is feasible.

Planning level wastewater discharge rates for industries at the project site are assumed to be approximately 1,500 GPD per acre for pre-treated industrial wastewaters. The pre-treated industrial waste water will likely require additional treatment from an on-site or regional wastewater treatment system. In addition to pre-treatment requirements the sewer plant, receiving waters may have quality and quantity limits for wastewater that should be investigate by any potential capitol intensive industry.

Actual rates of wastewater generation vary widely depending on the specific users. The cost for an on-site industrial wastewater treatment facility operated by the park will vary greatly depending on the industry, their mode of productions, and the amount being re-used and recycled. (See Chapter 1-3 for further discussions of Industrial Symbiosis.)

### **DOMESTIC WASTEWATER**

There are three primary options for the treatment of domestic wastewater generated at the project site: (1) on-site septic system (2) new domestic wastewater treatment plant, and (3) use or expand existing treatment plant at TransAlta Centralia Operations.

#### **On Site Septic System**

An on-site septic system is typically the least expensive way to treat wastewater, these systems are not appropriate to treat most pre-treated industrial wastewaters. These systems would typically be designed to serve each of the seven individual Development Areas independently. The soils of Lewis County generally have high clay and silt content that make it difficult for the septic tank effluent to percolate into the ground. The soils at the project site have been extensively graded, so percolation rates are unknown. A septic system at the project site could possibly require an advanced drain field (sand filter mound) system if the soils at the Industrial Park do not have adequate percolation characteristics.

Only the domestic wastewater from the project site will be allowed to discharge to conventional drainfields without pretreatment - a permit will be required.

- Domestic wastewater in amounts of 3,500 GPD would be permitted by Lewis County
- Domestic wastewater in amounts of 3,500 GPD to 14,500 GPD would be permitted by the State Department of Health
- Domestic wastewater in amounts of 14,500 GPD or greater would be permitted by the State Department of Ecology.

If mechanical treatment is involved, DOE will be the regulatory body regardless of the volume. Assuming that a 100 acre site will have 2.2 employees (140 acres x 2.2 employees= 308 employees), the DOE Criteria for Sewer Works Design indicates that these 308 employees will each produce 15 gallons of domestic waste per day, approximately 4,620 GPD on a typical 140 acre site. The EPA On-site Wastewater Treatment Systems Manual indicates that it is common practice for a septic system at an industrial park to be sized two to three times the estimated design flow.

The cost of a 10,000 GPD Septic System on a 140 acre site is in the range of \$375,000 to \$470,000 (including, soils exploration and feasibility, design and permitting, and construction).

**Table 77 –Septic System**

GPD of Domestic Waste	Treatment	Acres	Opinion of Probable Cost	
			Low	High
10,000	On-Site Septic	140	\$375,000	\$470,000

Source: RS Means Site Work and Landscaping Cost Data, 2008. 27<sup>th</sup> Edition.

**Industrial Park Phased Waste Water Treatment Plant**

In order to use less space, treat difficult waste, deal with intermittent flow or achieve higher environmental standards, a number of designs of hybrid treatment plants have been produced. Such plants often combine all or at least two stages of the three main treatment stages into one combined stage. It may be feasible for the project site to incorporate a package treatment plant as a part of the on-site waste water treatment plant. The first phase of an on-site treatment plant would likely need to be planned to have the capacity to treat approximately 18,840 GPD of domestic waste and up to 858,480 GPD of pre-treated industrial process waste water.

Areas 1, 2, 3, and 4 are anticipated to be ready for development 5 to 15 years before Areas 5, 6, and 7. It is feasible that the first industrial development could construct and design a wastewater treatment package plant that would meet their needs, this plant could possibly be expanded at the time an adjacent site develops.

**Table 78 – Phase 1 Forecasted Waste Water Generation**

Development Area	Average Total Acre	Employees an Per Acre (2.2)	Forecasted Domestic Wastewater - GPD (Developments 1 -4)  *Assuming 15 GPD per employee	Forecasted Pre-Treated Industrial Wastewater (Areas 1-4)  *assuming baseline flow of 1,500 GPD	Total GPD
1	140	308	4,620	210,000	214,620
2	140	308	4,620	210,000	214,620
3	140	308	4,620	210,000	214,620
4	140	308	4,620	210,000	214,620
<b>Total</b>	<b>560</b>	<b>1,232</b>	<b>18,840</b>	<b>840,000</b>	<b>858,480</b>

The second phase of the wastewater treatment plant would expand the capacity of the plant allowing it to treat the waste generated in the remaining three sites. Forecast show the second phase of the

development to need the capacity to generate an additional 14,000 GPD of domestic waste and approximately 650,000 GPD of treated process waste water.

**Table 79 – Phase 2 Forecasted Waste Water Generation**

Development Area	Average Total Acre	Employees an Per Acre (2.2)	Forecasted Domestic Wastewater - GPD (Developments 1 -4)  *Assuming 15 GPD per employee	Forecasted Pre-Treated Industrial Wastewater (Areas 1-4)  *assuming baseline flow of 1,500 GPD	Total GPD
5	140	308	4,620	210,000	214,620
6	140	308	4,620	210,000	214,620
7	140	308	4,620	210,000	214,620
<b>Total</b>	<b>420</b>	<b>924</b>	<b>13,860</b>	<b>630,000</b>	<b>643,860</b>

Notes:

- Reclamation activities are underway on Areas 5, 6, and 7, these areas will not be released to the industrial park management until 2014 to 2018.

## Phased Development of the Sanitary Sewer System

It is assumed that at full build out of the 1,000 acres targeted for development will generate approximately 1.5 million GPD of waste waters (Phase One - 858,480 + Phase Two -643,860). If any one industry at the project site is not a process water intensive use (such as assembly or welding), the need to treat wastewater will be dramatically be reduced. The estimates for sewer do not take into consideration this outlier.

- The phased development of the waste water treatment plant will require less initial capital than developing a treatment facility to process the industrial park at full capacity.
- Phased development allows investment in wastewater treatment facilities to be made concurrently with the need and ability of users to pay. The wastewater treatment plant could be modified to accommodate sewage for the entire industrial development at a later date.
- Treated sewage from the early phases of development at the project site may be able to be surface discharged into waters of the state (such as the Chehalis River or the Skookumchuck).
- Some reclaimed pre-treated industrial wastewater may be used at the industrial park for irrigation, fire protection, and industrial processes.
  - When discharge is not feasible, water reuse is well suited for the assumed operations at the project site- some needs for water at the site will be for industrial processes that do not require the water to be potable water quality.

**Table 80 – Possible Phased Sanitary Sewer Treatment System Opinion of Probable Cost**

Treatment System	Treatment Capacity	Areas Served	Cost (permitting not included)		Cost (unanticipated problems encountered)
			Low <sup>23</sup>	High <sup>24</sup>	
<b>Phase 1: Package Treatment Plant</b>	900,000 gallons a day peak flow	Four 140-acre industrial developments	Low <sup>23</sup>	High <sup>24</sup>	Atypical Conditions <sup>25</sup>
			\$5.75 million	\$ 6.96 million	\$10.12 million
<b>Phase 2: Package Treatment Plant</b>	600,000 gallons a day peak flow	Three 140-acre industrial developments	\$3.84 Million	\$4.64 million	\$6.75 million

**Use Existing Treatment Plant at TransAlta Centralia Operations**

TransAlta Centralia Operations facility operates a domestic wastewater treatment plant at their facility, which uses aeration and chlorination methods. Give the reduction in the number of employees at the facility, it may be feasible for the first industry that develops at the industrial park, if a mutual agreement can be made with TransAlta, to utilize their existing wastewater treatment plant to treat the domestic waste produced at the first site.

**Conveyance**

Exhibit 8 demonstrates a conceptual sewage conveyance plan with 18” gravity lines and parallel force main lines with a wastewater treatment plant located at the north boundary of the industrial park.

**Table 81 – Sanitary Sewer Collection System Opinion of Probable Cost**

Area Served	Sewer Line Segment	Conceptual Plans	Estimated Cost per Linear Foot (includes parallel force main)		Estimated Cost	
			Low	High	Low	High
1, 2, and 3  For crossing of Packwood Creek we have	A	5,600 LF of 18” Parallel Gravity and Force Main	\$250	\$350	\$1,400,000	\$1,960,000
		40 LF of 18” Parallel	\$450	\$550	\$18,000	\$22,000

<sup>23</sup> RS Means, Site Work and Landscape Cost Data. 27<sup>th</sup> Edition. 2008

<sup>24</sup> A 20% contingency was added to the RS Means estimated cost.

<sup>25</sup> Cost Estimating Guide, New Mexico Environmental Finance Center, June 2007.

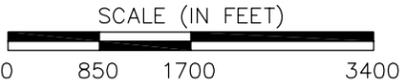
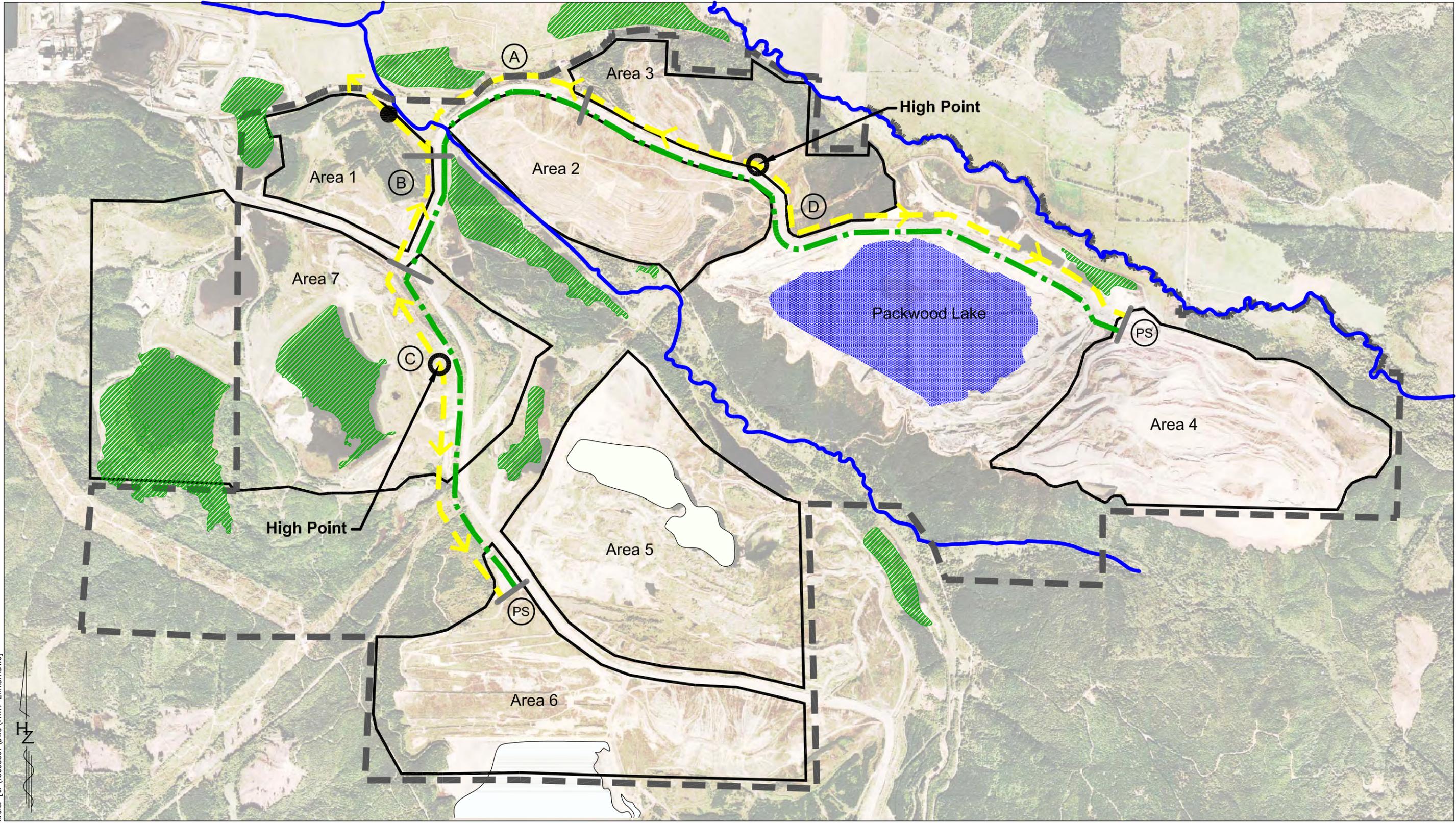
Area Served	Sewer Line Segment	Conceptual Plans	Estimated Cost per Linear Foot (includes parallel force main)		Estimated Cost	
assumed an additional cost for 40 linear feet		Gravity and Force Main			\$1,418,000	\$1,982,000
<b>7</b>	B	2,500 LF of 18" Parallel Gravity and Force Main	\$250	\$350	\$625,000	\$875,000
<b>5, 6</b>	C	6,600 LF of 18" Parallel Gravity and Force Main	\$250	\$350	\$1,650,000	\$2,310,000
<b>4</b>	D	11,400 LF of 18" Parallel Gravity and Force Main	\$250	\$350	\$2,850,000	\$3,990,000
<b>Total</b>					\$7,961,000	\$11,139,000

\* Costs in Table 80 are assuming the sewer lines are installed at the time the road is developed.

\*\* Costs assume a pump station will be required at the two low points on site.

## Exhibit 8. On Site Sewer Infrastructure

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 Drawing: J:\15093501\DWG\FINALS\_DRAFTS\ONSITE\_SANITARY\_SEWER.DWG  
 Xrefs: [J:\15093501\DWG\1\17 EXHIBIT.DWG]



**Legend**

- POTENTIAL TREATMENT PLANT OR CONNECTION TO TRANSALTA/CENTRALIA SYSTEM
- (A) SANITARY SEWER LINE SECTION/PHASES
- (PS) POTENTIAL SEWAGE PUMP STATION
- PROPOSED SANITARY SEWER GRAVITY MAIN
- - - PROPOSED SANITARY SEWER FORCE MAIN
- PROJECT SITE
- TO BE FILLED (POST RECLAMATION)

Segment	Linear Feet
(A)	5,600
(B)	2,500
(C)	6,600
(D)	11,400

**On-Site Sanitary Sewer Alternatives Exhibit 8**  
 2009

## Off Site Sewer

Discussion of options for addressing on-site sanitary sewer service needs was included in the on-site infrastructure section. This off-site section provides discussion of options to connect the sewer conveyance system to the proposed industrial sites to existing City of Centralia waste water treatment facilities off-site.

### **CURRENT CONDITIONS**

- Ground surface elevation at TransAlta’s point of connection = 220 feet above sea level
- Ground surface elevation of City of Centralia Waste Water Treatment Plant = 145 feet above sea level

The City of Centralia operates the nearest municipal wastewater treatment plant. This plant was recently constructed northwest of the City’s UGA boundary adjacent to the Chehalis River, providing primary and secondary treatment for the City. The wastewater processing units consist of headworks, aeration basins, clarifiers, UV disinfection, and a plant effluent outfall. Solids processing includes grit removal, dewatering, lime stabilization, heat pasteurization and land application of the resulting Class A extraordinary quality bio-solids on a City owned farm property where hay and occasionally other crops are grown.

### **ASSUMED FUTURE CONDITIONS**

Table 81 demonstrates assumed minimum sewer flows to be generated at the TransAlta Industrial Park. For planning purposes, the flows have been divided into Basin 1 and Basin 2. Two parallel mains are possible for the off site conveyance option that takes into consideration phasing and peak flows of sewage.

**Table 82 – Forecasted Sewer Flows (pre-treated and domestic)**

Development Area	Average Total Acre	Employees an Per Acre (2.2)	Forecasted Domestic Wastewater - GPD (Developments 1 -4)  *Assuming 15 GPD per employee	Forecasted Pre-Treated Industrial Wastewater (Areas 1-4)  *assuming baseline flow of 1,500 GPD	Total GPD
1	140	308	4,620	210,000	214,620
2	140	308	4,620	210,000	214,620
3	140	308	4,620	210,000	214,620
4	140	308	4,620	210,000	214,620
<b>Basin 1 Sub Total</b>	<b>560</b>	<b>1,232</b>	<b>18,840</b>	<b>840,000</b>	<b>858,480</b>
5	140	308	4,620	210,000	214,620

Development Area	Average Total Acre	Employees an Per Acre (2.2)	Forecasted Domestic Wastewater - GPD (Developments 1 -4) *Assuming 15 GPD per employee	Forecasted Pre-Treated Industrial Wastewater (Areas 1-4) *assuming baseline flow of 1,500 GPD	Total GPD
6	140	308	4,620	210,000	214,620
7	140	308	4,620	210,000	214,620
<b>Basin 2 Sub Total</b>	<b>420</b>	<b>924</b>	<b>13,860</b>	<b>630,000</b>	<b>643,860</b>
<b>TOTAL</b>	<b>980</b>	<b>2,156</b>	<b>32,700</b>	<b>1,470,000</b>	<b>1,502,340</b>

## Potential Improvements

### **CONVEY WASTEWATERS TO CITY OF CENTRALIA TREATMENT PLANT**

Two alternatives to convey wastewaters to the City of Centralia from Downing Road have been identified. Both options assume an 18" gravity sanitary sewer main extending along Big Hanaford Road to Downing Road (approximately 29,000 linear feet). This line is shown crossing a rail line, three creeks, and possibly wetlands which affects the cost of development.

From Downing Road alternates include (1) a dedicated force main serving only the project site and (2) a gravity main system with pump stations that could also be used by the City of Centralia to serve adjacent developments within the UGA.

#### **Alternate 1: Gravity Main along Pearl Street with Lift Stations Serving Property Along the Route.**

Under this option, a gravity sewer main would be constructed for a distance of approximately 1.3 miles from the proposed 18" line at Downing Road south where it would discharge into the City's of Centralia's conveyance system at Pearl Street near Carson Street. If peak flows exceed the capacity, temporary storage of the sewage could be provided in a facility at the project site.

The gravity main would follow Big Hanaford Road to Highway 507 and then extend south to Pearl Street, discharging to existing lines. Five pump stations are assumed to be required, connected by gravity lines of approximately 24" diameter. By employing this option, it should be feasible for some residential and commercial development to utilize the proposed sewage pipeline. This option may require an upgrade of parts of the City's sewage conveyance system, but can also be an opportunity for some Centralia and Lewis County residents not previously served with sewer the ability to tie into the system. Land use considerations may need to be addressed if potential service areas are outside of UGA.

#### **Alternate 2: Dedicated Sewer Force Main Serving only the Project Site.**

A new force main could be constructed for a distance of approximately 3.6 miles from the proposed 18" line at Downing Road to the City of Centralia waste water treatment plant. This would allow for the development of most industries; high water users might require some additional disposal options if peak flows exceeded the capacity of the line or treatment plant, a storage facility could be provided at the project site.

A dedicated sewer force main line could follow Big Hanaford Road extending due west under I-5 and the railroad tracks to the treatment plant along the alignment of a new road to the proposed North County interchange. Due to the topography of the site, 2 pump stations (2.5 MGD each) located along the lines route are assumed necessary to convey the sewage. This option will require extensive cooperation with State, County, and Local officials. Two parallel pipes might be used to accommodate phasing and peak flow considerations.

This option has several environmental constraints, including crossings of:

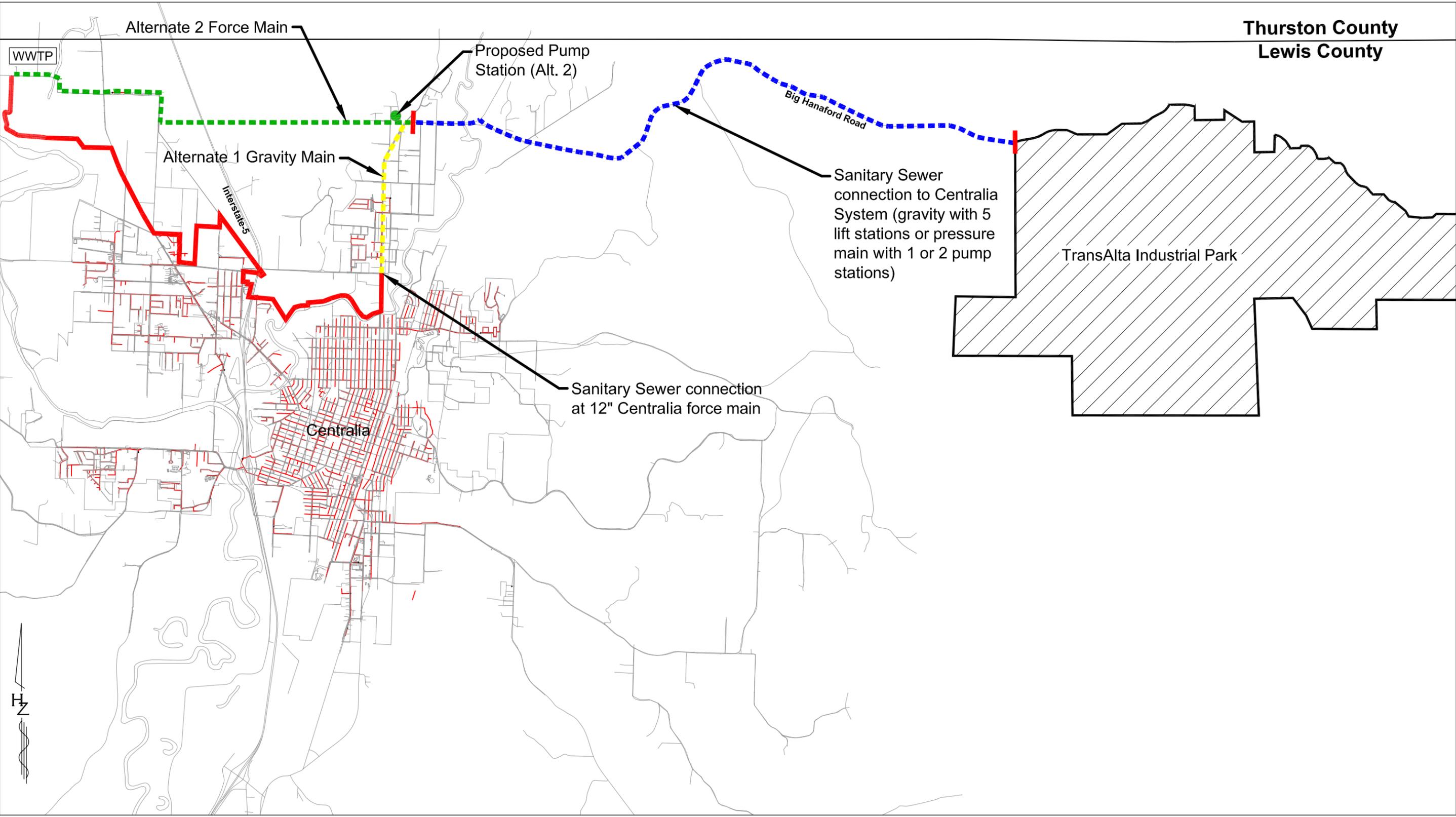
- Two creeks
- Rail line
- Interstate- 5
- Stormwater detention facility
- River
- Wetlands

**Table 83 – Off-Site Conveyance System Opinion of Probable Cost**

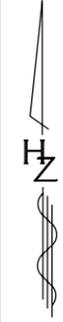
Big Hanaford Line	Unit (LF)	Unit Cost		Total	
		Low	High	Low	High
18" Gravity Main with 5 lift stations along Big Hanaford Road	29,100	\$375	\$475	\$10,912,500	\$13,822,500
<b>Alternate 1</b>					
18" gravity or two 10" gravity mains along Pearl Street	7,000	\$200	\$325	\$1,400,000	\$2,227,500
<b>Alternate 1 Sub-Total</b>				<b>\$12,312,500</b>	<b>\$16,050,000</b>
<b>Alternate 2</b>					
18" Force Main with Lift Station	19,100	\$850	\$1,250	\$16,235,000	\$23,875,000
<b>Alternate 2 Sub-Total</b>				<b>\$27,147,500</b>	<b>\$37,697,500</b>

- Cost does not assume the acquisition of right-of-way
- 18" line along Big Hanaford Rd. will be required to cross rail, creek, and some work in critical areas is assumed.

**Exhibit 9. Off Site Sewer**



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 Drawing: J:\15093501\DWG\FINALS\_DRAFTS\OFFSITE\_SANITARY\_SEWER\_MAP.DWG  
 Xrefs: [J:\15093501\DWG\1\17 EXHIBIT.DWG]



SCALE (IN FEET)  
 0 2000 4000 8000

**Legend**

- - - - - POTENTIAL GRAVITY MAIN
- - - - - GRAVITY MAIN ALTERNATE 1
- - - - - FORCE MAIN ALTERNATE 2
- EXISTING FORCE MAIN
- EXISTING CITY SANITARY SEWER MAINS
- WWTP EXISTING WASTEWATER TREATMENT PLANT

SS Segment	Linear Feet
Potential Gravity Main (Big Hanaford Line)	29,100
Gravity Main Alternate 1	7,000
Force Main Alternate 2	19,100

# ON SITE STORM DRAINAGE IMPROVEMENT

## Current Conditions

Development at the project site will cause changes to patterns of storm water flow from the land surface into receiving water. Water quality can be affected when runoff carries sediments or other pollutants into streams, wetlands, lakes, marine waters or in the groundwater.

General requirements for storm water management systems can be found in RCW 90.48, the Clean Water Act; extensive requirements are included in Lewis County Code 15.45.

The current storm water system on-site was developed under a Federal Mine permit to accommodate flows during mining and reclamation. Locations of post mining surface drainage channels are shown on the post-mining topography map Figure 5.1-1 of the Federal Mining Permit, included in this report in Appendix 1. The Federal Mine Permit indicates that surface drainage was an important factor in the design of the post mining topography. Primary and secondary drainages are planned for reconstruction based upon the locations of the original channels.

The project area is within Water Resource Inventory Area (WRIA) 23, Upper Chehalis, which indicates that there are:

- FEMA Q3 Flood waters
- DOE 303(d) Water Bodies

## Storm Water Service to Industrial Sites

A prime consideration will be returning storm water flow from the land surface into receiving waters. Discharge into disposal sites should be controlled so as to mimic the approximate rates at which runoff from the site percolated to ground water and discharged to surface water. Each capital intensive industry may be required to obtain an NPDES permit.

Storm water discharge control requirements are outlined in Lewis County Code 15.45.220. The DOE Storm water Management Manual for Western Washington that provides guidelines on storm water management that are referenced in County Code as part of required measures to control quantity and quality of storm water produced by new development.

The intent of the Stormwater Management Manual is that runoff from new development shall detain differences in stormwater from the pre and post development conditions. When new development at the project site creates impervious surfaces, stormwater that usually infiltrates into the groundwater may flow in surface water courses at a higher peak rate than under pre-development conditions. Under the requirements in the manual, only the rate of flow of stormwater from the pre-development condition is intended to flow off-site; the difference between the pre and post development conditions must be detained on-site and released at pre-development rate.

The NPDES discharge point for the industrial park is located between Area 1 and Area 2 of the conceptual industrial park. The existing systems for handling water quality and quantity in on-site ponds are expected to be generally adequate in size to serve the proposed development areas. Individual developments will be required to have their own stormwater conveyance systems, modifications may be

needed on a site by site basis to meet County drainage code requirements.

The storm system at the site is planned to consist of open ditches. Limited areas of enclosed systems will discharge to the open ditch system. Open ditch systems are planned for several reasons:

- Land is generally available for open systems at the project site;
- Lower initial cost; and
- Open systems have several environmental benefits, including:
  - Water quality treatment in grass lined swales and ditches;
  - Infiltration occurs along conveyance; and
  - Rate of flow is slowed relative to piped conveyance.

### ***PERMITS***

Once reclamation to industrial standards is complete, the sites will be released from the mining permit. Storm water systems to serve new development on individual industrial development sites will then fall under the jurisdiction of the Lewis County Department of Public Works, Division of Surface Water Management. The final systems for the industrial developments will be required to receive approval by this agency. Since there are currently storm water treatment and detention facilities on the site that are sized for maximum disturbance of the site; it is assumed there will be adequate capacity for industrial development on the site. Industrial developments will be required to obtain additional permits from the Department of Ecology as noted below.

Sites which have runoff from industrial areas and fall within certain Standard Industrial Classifications are required to obtain an individual storm water permit from the Department of Ecology. The Department of Ecology also issues permits for storm water discharges during construction.

The project site has a clear cost benefit from the fact that the storm system is in place and sites can be marketed as having reduced costs to individual site developers.

### ***OPINION OF PROBABLE COST***

The cost of on-site storm sewer conveyance system has been incorporated into the estimates for road improvements. Costs for individual site collection systems (including any additional treatment required by Ecology) are expected to be included in individual site development costs.

## **DRY UTILITIES**

Dry utilities (gas, power, and telecommunications) within industrial parks are often placed in underground joint utility trenches along the streets to serve individual development sites. The connection points to gas, power, and telecommunications are discussed below.

### ***CURRENT CONDITIONS***

#### ***Gas:***

The northwest natural gas line extends through the industrial park, running southwest to northeast. However, Puget Sound Energy has indicated that to provide service to the project site would require an extension from their intermediate pressure system from approximately four miles from the project site, which would include river and creek crossings and two railroad crossings. Cost of the project would probably be in the \$3.5 to \$4 million range. Williams' gas transmission system is within approximately two miles but would require a gate station plus a major gas main extension; this improvement may exceed the PSE extension costs.

#### ***Electricity:***

Adjacent to the gas line, a major power line also extends through the property. A connection to the power line could provide service to the site. Drawing power from the line would likely require a new substation to service the industrial park. A distribution system would need to be provided within the sites, requiring coordination with Lewis County PUD.

#### ***Telecommunications:***

There are fiber optic lines located along the project sites northern boundary.

### ***COST OF IMPROVEMENTS:***

Extending dry utilities within an industrial site is often done by/initially paid for by the provider. The installation costs are then repaid through revenues. Major improvements such as gas pressure reducing stations or electrical substations needed to serve the needs of a particular user may need to be negotiated on a case by case basis. The road system has been conceptually designed to provide space for dry utilities.

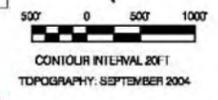
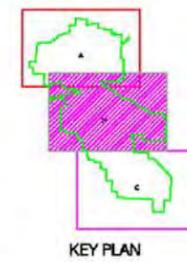
# APPENDIX 1

- TransAlta Centralia Federal Mine Permit WA-0001E. Figure 5.1-1b. *Central Field Postmine Topography and Land Use*. (project site boundary has been incorporated onto the Figure)
- TransAlta Centralia Federal Mine Permit WA-0001E. Figure 5.6-1b. *Central Field Postmine Channel Classification*. (project site boundary has been incorporated onto the Figure)
- TransAlta Centralia Federal Mine Permit WA-0001E. Figure 3.4-2b. *Central Field Wetland*. (project site boundary has been incorporated onto the Figure)

**CENTRAL FIELD  
POSTMINE TOPOGRAPHY  
AND LAND USE**

DATE: July 12, 2007  
SCALE: NTS  
FIGS: 1-1b, 12a, 12b, 12c  
DESIGN BY: DGM  
FIGURE: 5.1-1b  
REVISION: 6  
DATE: 04/07

NO.	REVISION	DATE	BY	CHKD
1	Revised to show	08/08	DGM	EC
2	Added transmission line	08/08	DGM	EC
3	Added transmission line	11/07	DGM	EC
4	Added transmission line	11/07	DGM	EC
5	Added transmission line	04/07	DGM	EC
6	Added transmission line	07/07	DGM	EC



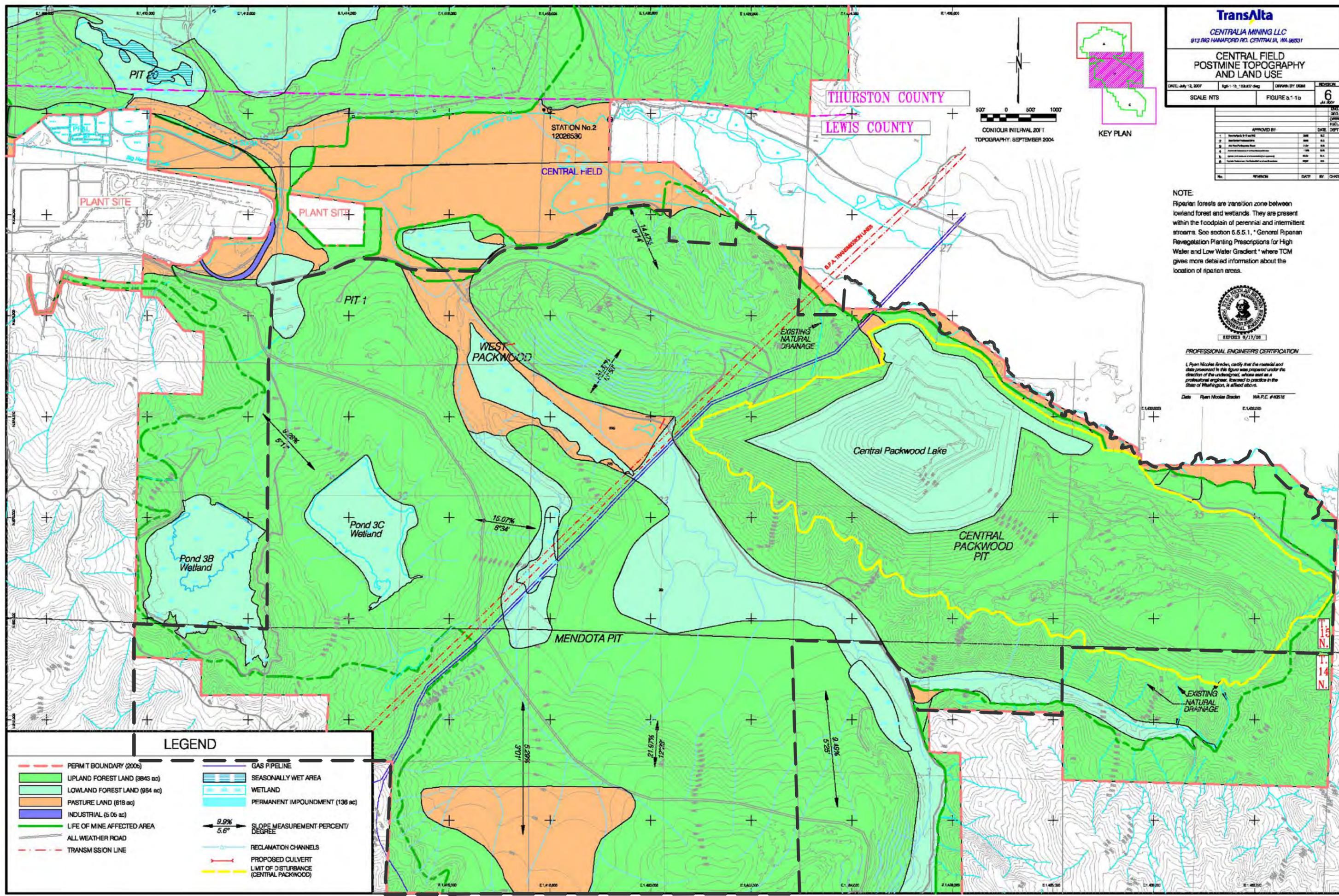
**NOTE:**  
Riparian forests are transition zone between lowland forest and wetlands. They are present within the floodplain of perennial and intermittent streams. See section 5.6.5.1, "General Riparian Revegetation Planting Prescriptions for High Water and Low Water Gradient," where TCM gives more detailed information about the location of riparian areas.



**PROFESSIONAL ENGINEER'S CERTIFICATION**

I, Ryan Nicole Bricker, certify that the material and data presented in this figure were prepared under the direction of the undersigned, who act as a professional engineer, licensed to practice in the State of Washington, as allowed above.

Date: Ryan Nicole Bricker WA P.E. #14820



**LEGEND**

PERMIT BOUNDARY (2006)	GAS PIPELINE
UPLAND FOREST LAND (3843 ac)	SEASONALLY WET AREA
LOWLAND FOREST LAND (964 ac)	WETLAND
PASTURE LAND (818 ac)	PERMANENT IMPOUNDMENT (138 ac)
INDUSTRIAL (5.06 ac)	SLOPE MEASUREMENT PERCENT/DEGREE
LIFE OF MINE AFFECTED AREA	RECLAMATION CHANNELS
ALL WEATHER ROAD	PROPOSED CULVERT
TRANSMISSION LINE	LIMIT OF DISTURBANCE (CENTRAL PACKWOOD)

CENTRAL FIELD  
POSTMINE  
CHANNEL CLASSIFICATION

DATE: Sept 01, 2005

SCALE: NTS

FIGURE 5.6-1b

APPROVED BY:

DATE:

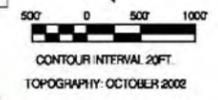
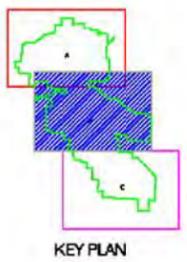
NO.:

REVISION:

BY:

DATE:

BY:



CONTOUR INTERVAL 20FT  
TOPOGRAPHY: OCTOBER 2002

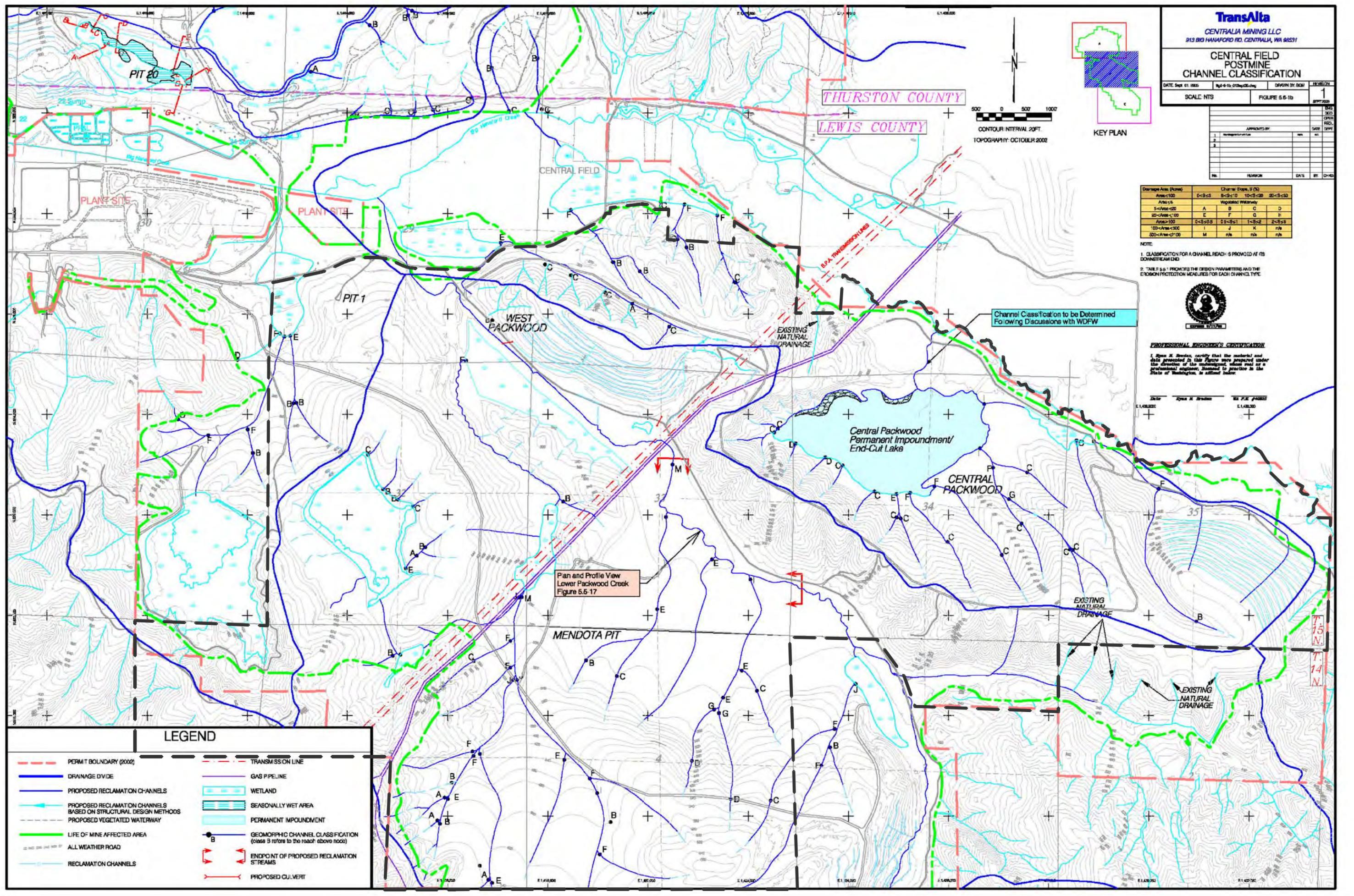
Drainage Area (Acres)	Channel Slope, S (%)			
	0-3<S	3-5<S	5-8<S	8-10<S
Area < 5	A	B	C	D
5 < Area < 20	E	F	G	H
20 < Area < 100	I	J	K	L
100 < Area < 500	M	N	O	P
500 < Area < 1000	Q	R	S	T

NOTE:  
1. CLASSIFICATION FOR A CHANNEL REACH IS PROVIDED AT ITS DOWNSTREAM END.  
2. TABLE 5.6-1 PROVIDES THE DESIGN PARAMETERS AND THE EROSION PROTECTION MEASURES FOR EACH CHANNEL TYPE.



PROFESSIONAL ENGINEER'S CERTIFICATION  
I, Ryan M. Braden, certify that the materials and data presented in this figure were prepared under the direction of the undersigned, who act as a professional engineer, licensed to practice in the State of Washington, in and to the best of my knowledge and belief.

Date: \_\_\_\_\_ Ryan M. Braden License No. 17174



Channel Classification to be Determined Following Discussions with WDFW

Plan and Profile View Lower Packwood Creek Figure 5.6-17

LEGEND

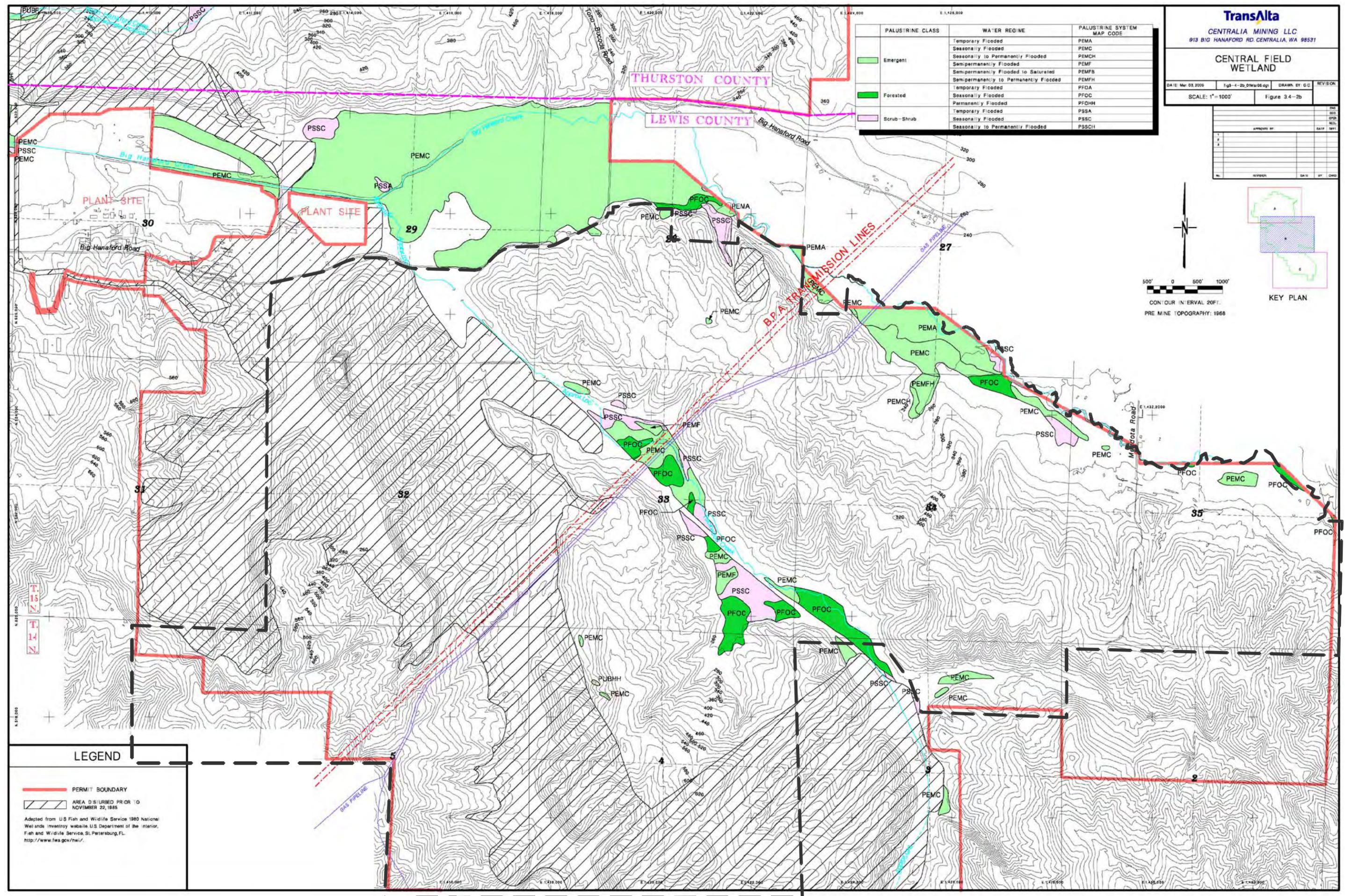
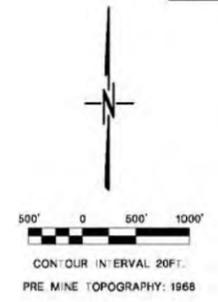
- PERMIT BOUNDARY (2002)
- TRANSMISSION LINE
- DRAINAGE DIVIDE
- GAS PIPELINE
- PROPOSED RECLAMATION CHANNELS
- WETLAND
- PROPOSED RECLAMATION CHANNELS BASED ON STRUCTURAL DESIGN METHODS
- SEASONALLY WET AREA
- PROPOSED VEGETATED WATERWAY
- PERMANENT IMPOUNDMENT
- LIFE OF MINE AFFECTED AREA
- GEOMORPHIC CHANNEL CLASSIFICATION (class B refers to the reach above node)
- ALL WEATHER ROAD
- ENDPOINT OF PROPOSED RECLAMATION STREAMS
- RECLAMATION CHANNELS
- PROPOSED CULVERT

**CENTRAL FIELD WETLAND**

DATE: Mar 03, 2009 Fig# 4-2b, 01/16/09.dgn DRAWN BY: G.C. REVISION:  
SCALE: 1" = 1000' Figure 3.4-2b

NO.	DESCRIPTION	DATE	BY	CHKD.

PALUSTRINE CLASS	WATER REGIME	PALUSTRINE SYSTEM MAP CODE
Emergent	Temporary Flooded	PEMA
	Seasonally Flooded	PEMC
	Seasonally to Permanently Flooded	PEMCH
	Sempermanently Flooded	PEMF
	Sempermanently Flooded to Saturated	PEMFB
Forested	Sempermanently to Permanently Flooded	PEMFH
	Temporary Flooded	PFOA
	Seasonally Flooded	PFOC
	Permanently Flooded	PFOHH
	Temporary Flooded	PSSA
Scrub-Shrub	Seasonally Flooded	PSSC
	Seasonally to Permanently Flooded	PSSCH



**LEGEND**

- PERMIT BOUNDARY
- AREA DISTURBED PRIOR TO NOVEMBER 22, 1985

Adapted from US Fish and Wildlife Service 1980 National Wetlands Inventory website US Department of the Interior, Fish and Wildlife Service, St. Petersburg, FL.  
<http://www.fws.gov/nwi/>

## APPENDIX 2

- Listed and Proposed Endangered and Threatened Species and Critical Habitat; Candidate Species; and Species of Concern in Lewis County as Prepared by the US Fish and Wildlife Service Western WA Fish and Wildlife Office. Revised November 1, 2007

**LISTED AND PROPOSED ENDANGERED AND THREATENED SPECIES AND  
CRITICAL HABITAT; CANDIDATE SPECIES; AND SPECIES OF CONCERN  
IN LEWIS COUNTY  
AS PREPARED BY  
THE U.S. FISH AND WILDLIFE SERVICE  
WESTERN WASHINGTON FISH AND WILDLIFE OFFICE**

**(Revised November 1, 2007)**

**LISTED ANIMALS**

Bull trout (*Salvelinus confluentus*)  
Canada lynx (*Lynx canadensis*)  
Gray wolf (*Canis lupus*)  
Grizzly bear (*Ursus arctos* = *U. a. horribilis*)  
Marbled murrelet (*Brachyramphus marmoratus*)  
Northern spotted owl (*Strix occidentalis caurina*)

**PLANT SPECIES**

*Lupinus sulphureus* ssp. *kincaidii* (Kincaid=s lupine)  
*Sidalcea nelsoniana* (Nelson's checker-mallow)

**DESIGNATED**

Critical habitat for the marbled murrelet  
Critical habitat for the northern spotted owl  
Critical habitat for *Lupinus sulphureus* ssp. *kincaidii* (Kincaid=s lupine)

**PROPOSED**

None

**CANDIDATE**

None

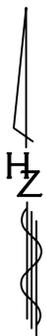
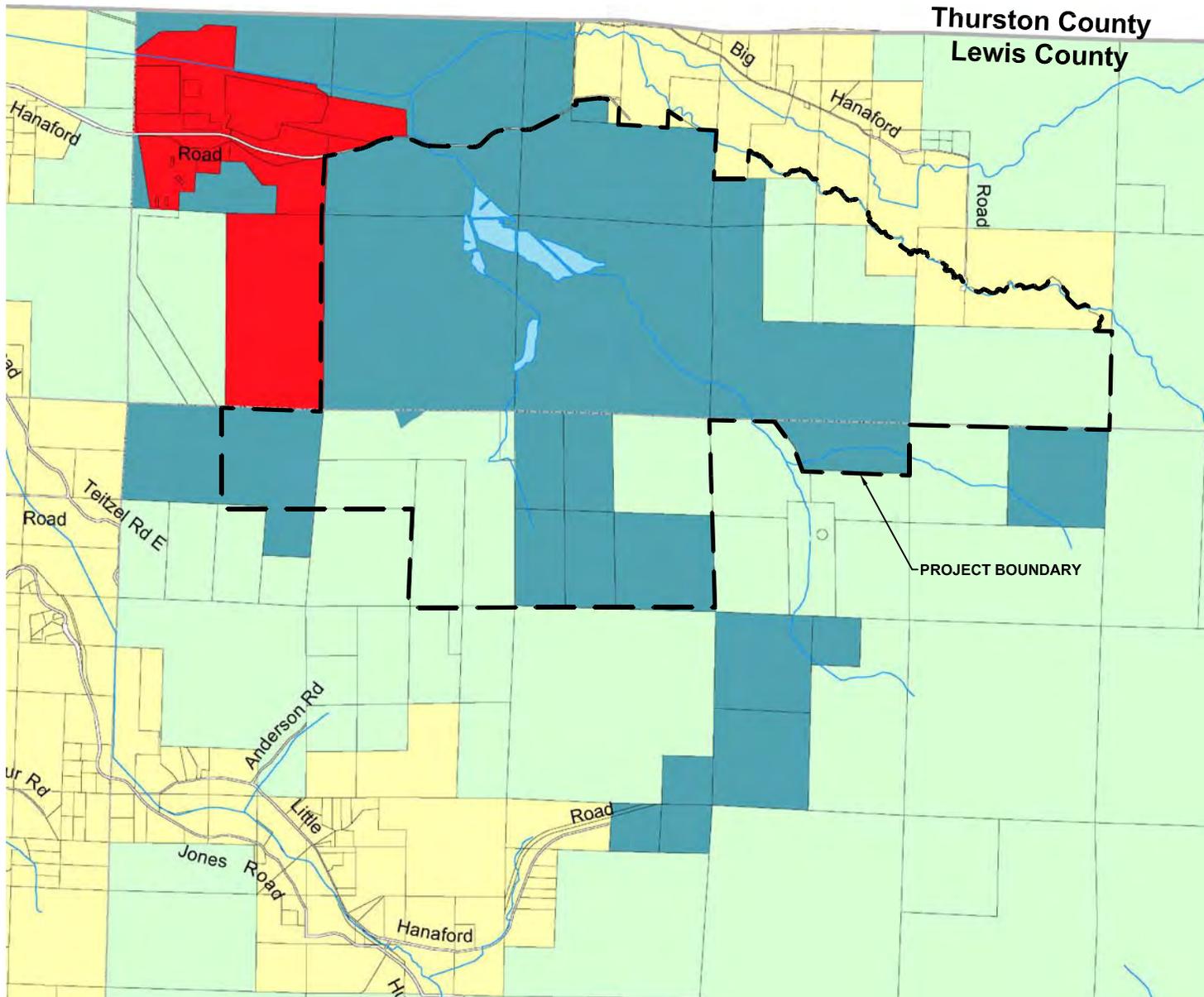
**SPECIES OF CONCERN**

Bald eagle (*Haliaeetus leucocephalus*)  
California wolverine (*Gulo gulo luteus*)  
Cascades frog (*Rana cascadae*)  
Coastal cutthroat trout (*Oncorhynchus clarki clarki*) [southwest Washington DPS]  
Columbia torrent salamander (*Rhyacotriton kezeri*)

Larch Mountain salamander (*Plethodon larselli*)  
Long-eared myotis (*Myotis evotis*)  
Long-legged myotis (*Myotis volans*)  
Northern goshawk (*Accipiter gentilis*)  
Northwestern pond turtle (*Emys* (= *Clemmys*) *marmorata marmorata*)  
Olive-sided flycatcher (*Contopus cooperi*)  
Oregon vesper sparrow (*Pooecetes graminus affinis*)  
Pacific lamprey (*Lampetra tridentata*)  
Pacific Townsend=s big-eared bat (*Corynorhinus townsendii townsendii*)  
Peregrine falcon (*Falco peregrinus*)  
River lamprey (*Lampetra ayresi*)  
Tailed frog (*Ascaphus truei*)  
Valley silverspot (*Speyeria zerene bremeri*)  
Van Dyke=s salamander (*Plethodon vandykei*)  
Western gray squirrel (*Sciurus griseus griseus*)  
Western toad (*Bufo boreas*)  
*Cimicifuga elata* (tall bugbane)  
*Delphinium leucophaeum* (pale larkspur)  
*Meconella oregana* (white meconella)

## APPENDIX 3

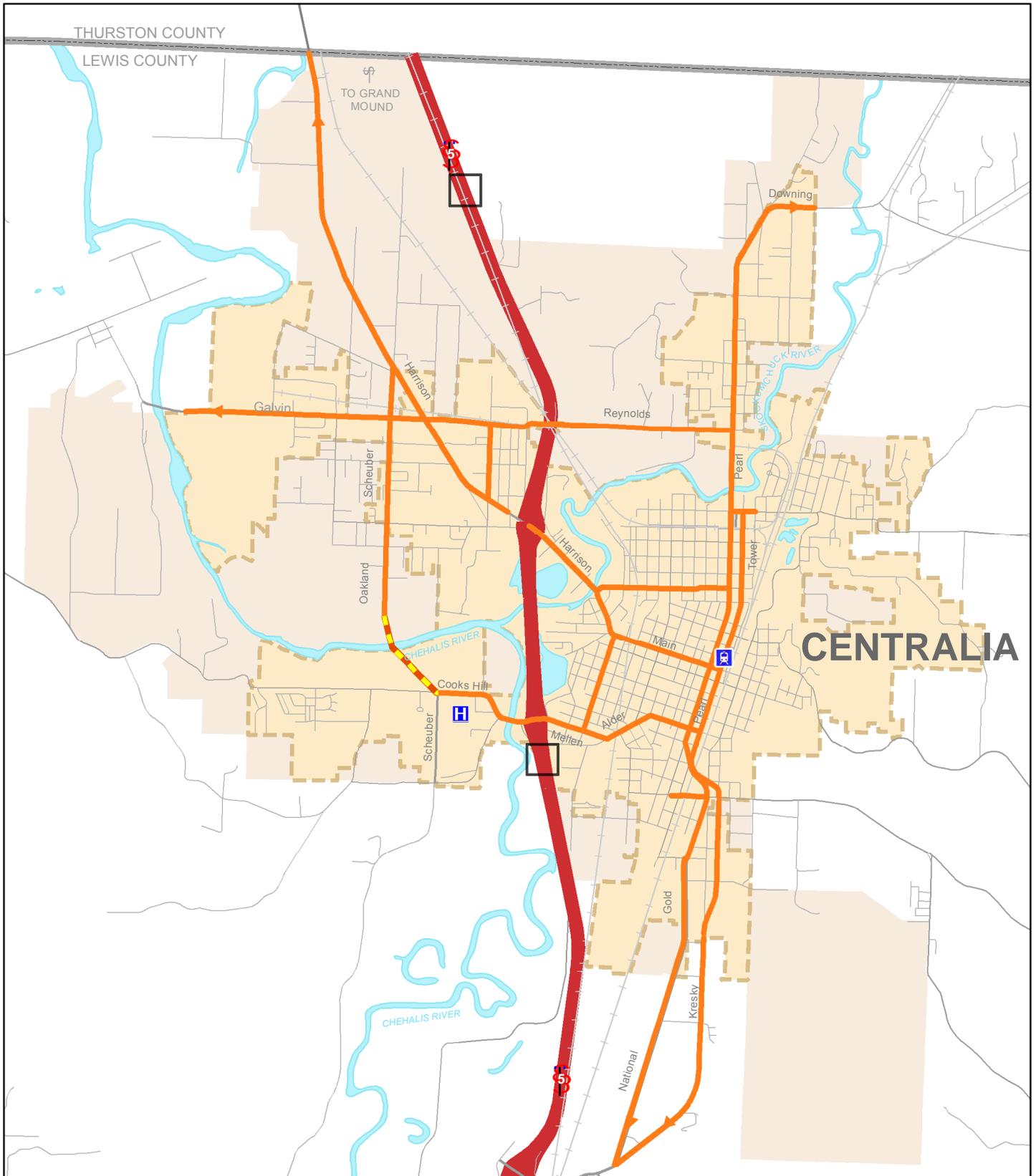
- Lewis County Zoning Map
- Centralia Comprehensive Plan. Map 6. *Freight Routes*. June 2007
- Transportation Analysis Area



Source: Lewis County

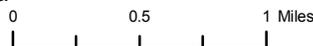
Zoning Classifications

Park	PTSA	RAI
City Limits	STR-4	RDD - 5
UGA - City	STMU	RDD - 10
UGA - County	STI	RDD - 20
CC	RRC - R.5	National Park / Wilderness
FC	RRC - R1	Agricultural Resource Lands
Forest Resource Land	RRC - R2	
Mineral Resource Lands	RRC - R10000	



Source: Lewis County (2004) and CH2M HILL (2006)

- |  |   |   |                       |
|--|---|---|-----------------------|
|  | Future Truck Route                      |  | Hospital              |
|  | Truck Route                             |  | Amtrak Station        |
|  | Future Interchange Improvement Location |  | Railroad              |
|  |   |  | Centralia City Limits |
|  |   |  | Urban Growth Area     |



**Map 6**  
**Freight Routes**  
 Centralia, WA



## APPENDIX 4

- Washington State Department of Natural Resources Letter. June 10, 2009.
- Lewis County Public Utility District Letter. May 29, 2009.
- Email correspondence with PSE. June 16, 2009.



June 10, 2009

**RECEIVED**

**JUN 11 2009**

**HUITT-ZOLLARS  
SEATTLE**

James McHendry  
Huitt-Zollars  
814 E. Pike Street  
Seattle, WA 98122

Subject: Request for natural heritage records

Mr. McHendry:

You requested records related to rare plants and/or high quality ecosystems in specific sections.

We have no information in our database for either of the categories in the locations you identified. This database tracks information since 1977.

Sincerely,

Peggy Murphy  
Public Disclosure Manager

COMMISSIONERS  
CHARLES R. TENPAS, President  
JAMES H. HUBENTHAL, Vice President  
BEN M. KOSTICK, Secretary

OFFICERS  
DAVID J. MULLER, Manager  
RICHARD L. BAUER, Treasurer  
JUNE R. JOHNSTONE, Auditor  
JIM DAY, Superintendent

# *Lewis County* PUBLIC UTILITY DISTRICT

321 NW PACIFIC AVENUE • CHEHALIS, WASHINGTON  
Mailing Address: P.O. Box 330, Chehalis, WA 98532-0030  
1-800-562-5612 • (360) 748-9261 • FAX (360) 740-2455

May 29, 2009

James McHendry  
Huitt-Zollars, Inc.  
814 E. Pike Street  
Seattle WA 98122

RECEIVED  
JUN 01 2009  
HUITT-ZOLLARS  
SEATTLE

Dear Mr. McHendry,

Your proposed 1000 acre industrial park is located within the District's service area. As such, the District will be glad to provide electrical service to the users of the industrial park in accordance with the District's policies.

The cost to provide electrical service is difficult, if not impossible, to calculate without knowing the location and electrical load requirements. A supply warehouse may have a 500 kilowatt load whereas a manufacturing plant may have a 10,000 kilowatt load at the same location. A single substation could serve the whole park, or multiple substations may be required.

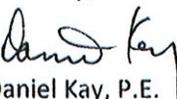
Generally, the costs of line extensions are borne by the developer or individual user. Our standard electrical service rate schedules for secondary metered (Schedule 20) or primary metered (Schedule 31) would apply. Any large single user over 10,000 kilowatts of load would require a special contract negotiated with the District's Commission, and would be subject to Bonneville Power Administration's large new load rate.

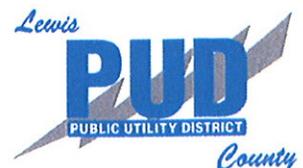
The cost and location of a substation or substations and the associated transmission and distribution facilities without better information on loads and locations is also difficult to determine.

Our Board of Commissioners will determine responsibility for the costs of the stations and facilities after evaluating loads, locations, and revenues from future customers.

If you have any questions, please feel free to contact me at (360) 740-2435.

Sincerely,

  
Daniel Kay, P.E.  
Chief Engineer



**McHendry, James**

---

**From:** Campion, John C [john.campion@pse.com]  
**Sent:** Tuesday, June 16, 2009 4:21 PM  
**To:** McHendry, James  
**Subject:** RE: Natural Gas Availability Request - Lewis County

James,

To serve the proposed development PSE would need to extend our intermediate pressure system a little over 4 miles which would include several river and creek crossings and a couple of railroad crossings. Cost would probably be in the \$3.5 to \$4 million range. Williams gas transmission system is within a couple of miles but would require a gate station plus a major gas main extension. Cost could easily exceed the PSE IP extension costs. Hope this information helps.

**John C. Campion**  
425.456.2298 tel  
206.604.5836 cell  
10885 N.E. 4th Street  
M/S PSE-11N  
Bellevue, WA 98004-5591

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**From:** McHendry, James [mailto:jmchendry@Huitt-Zollars.com]  
**Sent:** Thursday, June 04, 2009 10:00 AM  
**To:** Campion, John C  
**Subject:** Natural Gas Availability Request - Lewis County

John –

Per our discussion on Tuesday, I have attached a request for a letter of natural gas availability. Please let me know if you need any further information, or if I can be of assistance in expediting this request.

Bests regards,

James T. McHendry  
Planner  
Huitt-Zollars, Inc.  
814 E. Pike Street  
Seattle, WA 98122  
206.324.5500

7/30/2009