



**A GUIDE TO
INTEGRATING HEALTH
INTO
STATE ENVIRONMENTAL POLICY ACT REVIEW**

JULY 2013

**TACOMA-PIERCE COUNTY HEALTH DEPARTMENT
ENVIRONMENTAL HEALTH DIVISION**

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The State Environmental Policy Act (SEPA) and the National Environmental Policy Act (NEPA) are intended to ensure that environmental values are considered during decision-making by state and local agencies. SEPA was adopted with four primary purposes, one of which is to stimulate the health and human welfare.

What, where and how land-use and development decisions are made will have a direct bearing on environmental quality and human health. These decisions carry ripple effects on the natural environment—air, water, land and wildlife habitat; and human behaviors, such as walking, social interaction, eating behavior and participation in recreation. The effects, in turn, impact such health outcomes as asthma, diabetes, obesity, heart disease, injuries, fatalities, mental stress, social isolation, health disparity and more (see Appendix).

To help more thoroughly incorporate health into environmental review (both under SEPA and NEPA), this guidebook provides some examples of environmental and health impacts, and mitigation measures, broken down by (1) project actions, (2) non-project (plans, policies and programs) actions or (3) both, for consideration. Mandatory mitigation measures include regulatory mandates or policy supports. These examples are not comprehensive. Tacoma-Pierce County Health Department (“Health Department”) encourages that project proponents consider them or lead agencies translate potential mitigation measures for non-project actions into policies of draft plans, as applicable; and work with the Health Department, other concerned agencies and affected community members to explore additional impacts and mitigation measures relevant to specific project or non-project proposals.

Currently, the Environmental Checklist has a stand-alone question addressing Environmental Health. The Health Department recognizes the majority of the checklist questions impact, to a certain degree, environmental and public health. To facilitate the integration of health impacts and mitigation measures throughout the environmental review, related checklist questions are cross-referenced in the table below.

Guidebook Organization			Related SEPA Element
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LAND-USE

LAYOUT AND DENSITY

Impacts

Studies indicate that the layout and the density of built environments can play a vital role in offering affordable and accessible healthy lifestyle choices to the diverse populations. The burden of urban sprawl and automobile dependency on public health are well documented in many scholarly articles (The Real Estate Research Corporation, 1974; McCann & Ewing, 2003; Frank, Andersen & Schmidt, 2004). People living in communities characterized by sprawling or land-extensive developments engage in less physical activity compared to those living in more compact and walkable communities (Li, Fisher, Brownson & Bosworth, 2005).

Uncontrolled development reduces the amount of land available for urban agriculture. In some areas, grocery stores have fled to suburbs as the result of urban sprawl and other factors. Land-use decisions may result in “food deserts” within certain parts of the cities; making it difficult for low-income and senior residents to access healthy and affordable foods (Morland, Wing, Diez-Roux and Poole, 2002). Research (Powell, Auld, Chaloupka, et al., 2007) suggests that individuals living near supermarkets have a higher quality diet, are more likely to eat the daily recommended amounts of fruits and vegetables, and less likely to be obese (Bodor, Rose, Farley, Swalm & Scott, 2008; Morland & Evenson, 2009).

Poorly built environments contribute to a number of chronic diseases, such as obesity, diabetes, heart disease, hypertension; and other forms of mental stress, such as depression and anxiety. This is due to reduced recreational opportunities, fewer grocery stores within walking access, and safety concerns (Frumkin, Frank and Jackson, 2004; Kerr et al., 2010; Samini, Mohammadina & Madanizadeh, 2009; Wolch et al., 2011).

In 2005, the Tacoma-Pierce County Board of Health passed Resolution 2005-3698 declaring obesity to be a serious threat to the health and well-being of Pierce County citizens. This resolution calls for community sectors, including community planners, to design environments conducive to active living and healthy eating. To meet the US Department of Health and Human Services 2008 Physical Activity Guidelines for Americans’ recommended “minimum 30 minutes per day of moderate physical activity”, any development proposals should attempt to:

- Provide opportunities for people to integrate physical activity into their everyday life; and
- Make healthy food environments, including supermarkets, farmers’ markets and community gardens, accessible and affordable to all segments of the community.

Mandatory Mitigation

Non-project Actions:

- The Washington State *Growth Management Act* stipulates that "Wherever possible, the land use element should consider utilizing urban planning approaches that promote physical activity." [RCW 36.70A.070(1)], and that " Pedestrian and bicycle component to include collaborative efforts to identify and designate planned improvements for pedestrian and bicycle facilities and corridors that address and encourage enhanced community access and promote healthy lifestyles" [RCW 36.70A.070(6)].

- The recently adopted *Countywide Planning Policies* (CPP) require each municipality in the county to update its comprehensive plan to address Health and Well-being (HW1-5). The full policy on health and well-being can be found on P. 40-42 by following the Pierce County—Countywide Planning Policy link provided in the Resources section below.

Potential Mitigation

Project Actions:

- Consider incorporating the following characteristics into development proposals to provide walkable environments:
 - ✓ Ability to meet residents' basic daily food and shopping needs within easy access (such as ½ mile or 20-minute walking distance)
 - ✓ Proximity and easy access by foot to destinations, particularly stores and services, within half-mile of dwelling units
 - ✓ Transportation networks including sidewalks, cross-walks, curb-cuts, street-lighting, etc
 - ✓ Community design features that promote walking for transport/utilization in addition to recreational purposes (e.g., linear parks and trails for recreation)
 - ✓ Connectivity between on-street and off-street trails that support physical activity
 - ✓ Residential intensification (for example: minimum net densities of 20 units per acre)
 - ✓ Block sizes restriction (for example: less than 5 acres)
 - ✓ Mixed-use development (for example: a variety of uses to support residents walking to services and shops)
 - ✓ Opportunities (i.e.: places or destinations) to socialize with neighbors (for example: urban parks, community gardens, urban parks and plazas)
 - ✓ Human-scale design and built form to support walking
 - ✓ Pedestrian-friendly street design (for example: buildings close to streets; porches, windows & doors; tree-lined streets; culturally-appropriate street signs; on-street parking; hidden parking lots; rear lane access to garages; slow speed streets; canopies and other weather protection design features)

Non-project Actions:

- Consider the implementation of complete streets supported by linear parks to create a comfortable, pleasant and safe walking environment. In 2008, the Tacoma-Pierce County Board of Health passed a resolution endorsing the adoption and implementation of “complete streets policies” by Pierce County municipalities.
- Consider the elements in the *Active Community Environments Checklist* (see link in Resources section) published by Washington State Department of Commerce when considering transportation and land use plans:
 - ✓ Compact residential design
 - ✓ Bicycle and pedestrian access, and on-street/off-street interconnected trails
 - ✓ Public transit
 - ✓ Accessible services; such as parks and open space, public amenities and transit stations
 - ✓ Intermodal connection

- ✓ Sidewalk buffer and width
- ✓ Crime prevention through environmental design (cpted)
- ✓ Bicycle facilities and parking
- ✓ Automobile parking standards
- ✓ Park-and-rides
- ✓ Park, recreation and open space dedication
- ✓ Building setback
- ✓ Utility standards
- ✓ Traffic calming
- ✓ School siting and design
- ✓ Safe routes and pedestrian infrastructure near schools
- ✓ School zone traffic control
- ✓ Shared use facilities for physical activity

Both Project and Non-project Actions:

Consider inclusion of the following healthy nutrition environments when proposing development alternatives or evaluating options for zoning and development regulations:

- ✓ Community gardens (e.g. ensuring there is dedicated land for community gardens)
- ✓ Active transportation or transit to support healthy food outlets such as farmers markets, grocery stores, and community gardens
- ✓ Safe pedestrian routes from individual properties to healthy food outlets through parking lots and between adjacent properties
- ✓ Zoning for healthy food establishments (such as zoning for neighborhood commercial to allow for food sales in neighborhood centers)
- ✓ Farmer's markets and healthy mobile food vending

Resources

Tacoma-Pierce County Health Department—Webpage on Planning for Healthy Communities contains additional information and tools to help integrate health into the comprehensive planning process: www.tpchd.org/environment/planning-healthy-communities/healthy-community-planning-toolbox/

Pierce County—Countywide Planning Policy: www.co.pierce.wa.us/DocumentCenter/View/6998

Puget Sound Regional Council—Vision 2040, Design Guidelines and Plan Review Manual: psrc.org/growth/vision2040
psrc.org/assets/254/designmanual.pdf
psrc.org/growth/planreview/pr-manual/

National Complete Streets Coalition: www.completestreets.org/

Tacoma-Pierce County Board of Health Complete Streets Resolution: <http://www.tpchd.org/files/library/1caec21c2d070fd7.pdf>

South Hill Health Impact Analysis: www.tpchd.org/files/library/aa862fed4d9631da.pdf

Active Living by Design: www.activelivingbydesign.org/events-resources/find-resources

2008 Pierce County Action Plan: www.tpchd.org/files/library/f88dec11fd52279e.pdf

Department of Commerce Active Community Environments Checklist:
here.doh.wa.gov/materials/active-community-environments/15_ACEtoolkt_E12L.pdf

Healthy Development Measurement Tool:
www.thehdmtool.org/

Tacoma-Pierce County Board of Health Obesity Resolution:
www.tpchd.org/files/library/b042eda3ce9c9999.pdf

CDC 2009 Recommended Community Strategies to Reduce Obesity:
www.cdc.gov/mmwr/preview/mmwrhtml/rr5807a1.htm

Planning for Food Access (American Planning Association):
www.planning.org/research/foodaccess/index.htm

Planning for Parks and open space:
www.commerce.wa.gov/DesktopModules/CTEDPublications/CTEDPublicationsView.aspx?tabID=0&alias=CTED&lang=en&ItemID=1691&Mid=944&wversion=Staging

State's Department of Commerce Growth Management Services:
www.commerce.wa.gov

Washington State Department of Health "Healthy Eating Active Living Program" staff contact:
James Kissee, Physical Activity Coordinator
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QUALITY OF LIFE AND PLACEMAKING

Impacts

The length and the quality of one's life are often involuntarily shaped by one's social and economic conditions which determine the risk of illness and the actions taken to prevent or treat illness (James, 2002). These conditions are circumstances, known as "social determinants of health", in which people are born, grow up, live, play, work and age, as well as the systems put in place to deal with illness. These determinants are often shaped by a wider set of forces—economics, social policies and politics. The lack of control over the conditions shaping one's life can trigger a chronic stress response, which can weaken the body's immune system and increase the risk of disease. Research reveals that a social gradient exists in health which varies across the socio-economic spectrum (MG Marmot, 2003).

Recent studies suggest gentrification of neighborhoods and involuntary displacement of the poor can be driven by transit-oriented developments (Snyder, 2010 and Puget Sound Sage, 2012). Gentrification further segregates groups of different incomes, ethnicities and life cycles. The social and physical isolation of underserved populations, particularly low-income minorities and the elderly, often limits access to jobs, healthy eating and active lifestyles. Research shows that those living in areas of concentrated poverty disproportionately suffer from a variety of health impacts; including violence, sexually transmitted diseases, weather-related deaths, poor nutrition and traffic fatalities (Anthony, 1998).

Research further indicates that high social capital is associated with increased life expectancy (Putnam and Alone, 2000). Meaningfully engaging the community, particularly the traditionally underserved populations, and fostering community cohesion through placemaking policies and techniques may help reduce gentrification impacts, prevent displacement and mitigate health disparities. Early involvement of all population groups and community organizations in efforts to address diverse health needs, create a common "healthy community" vision, and foster a sense of community can promote quality of life for all.

Mandatory Mitigation

Non-project Actions:

- Washington State *Growth Management Act* prescribes procedural criteria for adopting comprehensive plans and development regulations (Chapter 365-196 WAC). In particular, WAC 365-196-600 requires early and continuous public participation.
- Pierce County's *Countywide Planning Policies* requires municipalities and the county to promote physical, social and mental well-being so that all people can live healthier (HW1); and incorporate provisions addressing health and well-being into appropriate local planning and decision-making processes (HW-2).

Potential Mitigation

Both Project and Non-project Actions:

- To prevent involuntary displacement and build community cohesion, underserved population should be engaged early on in the development or planning process. “Inclusive Public Engagement Tools” are available in Health Department’s Healthy Communities Planning Toolbox (see link to toolbox under Resources below) to help identify:
 - ✓ Your unique group(s) of underserved population
 - ✓ Inclusive ways to “early” engage affected community members in EIS scoping/visioning, identification and consideration of development alternatives, and throughout land-use decision-making processes.
- Include a more balanced and holistic “people-planet-prosperity lens” when assessing development alternatives and impacts. Ask questions such as:
 - ✓ Who will be affected and how?
 - ✓ Who may be displaced as a result of redevelopment?
 - ✓ What are residents’ health, environmental and economic concerns and needs?
 - ✓ How may the development alternatives affect residents’ livelihood—both benefits and costs?
- Consider encouraging affordable housing choices, both ownership and rental, to provide opportunities for residents to remain in their own neighborhoods after redevelopment. This may mean the exploration of innovative development regulatory tools, such as inclusionary zoning and density bonuses/incentives, to encourage affordable housing and a wide range of housing mix.
- Consider making meaningful places for civic engagement and social interaction among diverse community members, such as community gardens, small urban parks/courtyards, linear open space, farmer’s markets, recreation facilities and social/civic hubs, etc.
- Consider incorporating cultural arts to promote community identity, and give meaning and attachment to place.

Resources

Tacoma-Pierce County Health Department—Webpage on Planning for Healthy Communities contains a Healthy Communities Toolbox to help integrate health into the comprehensive planning process: www.tpchd.org/environment/planning-healthy-communities/

For assistance in engaging ethnic communities or specific segments of population in planning and addressing health disparity, contact:

Cross Cultural Collaborative of Pierce County
(253) 248-6177

www.crossculturalcollaborative.org/

International Association for Public Participation
Spectrum of Public Participation chart with methods for different levels of engagement:
www.iap2.org/associations/4748/files/IAP2%20Spectrum_vertical.pdf

Washington State Department of Commerce Growth Management
www.commerce.wa.gov/Services/localgovernment/GrowthManagement/Growth-Management-Planning-Topics/Pages/Citizen-Participation-and-Coordination.aspx
(See earlier section for staff contacts)

Puget Sound Regional Council Public Participation Plan:
www.psrc.org/assets/8575/WEB_PublicParticipatonPlan.pdf
www.psrc.org/assets/3931/Outreach_Public_Involvement.pdf

Green Cities: Good Health
Community Building: depts.washington.edu/hhwb/Thm_Community.html
Place Attachment: depts.washington.edu/hhwb/Thm_Place.html

Health Department Contact

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AIR

OUTDOOR AIR

Impacts

Air pollution comes from a variety of sources, such as industries and factories, cars and other road vehicles, non-highway vehicles and motor equipment, wood stoves and fire places, and outdoor burning of yard waste, farm waste and forest products). Mobile source air toxics from vehicles, such as diesel emissions/exhaust, are among the toxics that pose a grave threat to human health. Air toxics affect both human health and the environment, including plants and animals. Higher risks are associated with those living or attending schools within close proximity to freeways or heavy-vehicle traffic areas (Gordian, Haneuse & Wakefield, 2005; Kim et al., 2008; Meng et al., 2008; and McConnell et al., 2010).

Pierce County's air quality is generally good on most days. However, there are times when air pollution can increase and threaten people's health. In winter, weather patterns can cause stagnant air that traps pollutants and wood smoke near the ground. In summer, some hot sunny days can lead to higher levels of ozone at ground level affecting human health. The pollutants of concern in the central Puget Sound region include particulate matter, carbon monoxide, ground-level ozone (also known as smog), greenhouse gases and other air toxics. Breathing in fine particles can cause death by harming the heart and blood vessels. This includes changes in the way the heart and blood vessels function, which can lead to heart attacks, stroke, cardiac arrest, and/or congestive heart failure.

Most of Pierce County lies within the 2009 Environmental Protection Agency (EPA)'s designated "air quality non-attainment area" with fine particle pollution exceeding the national limit, posing major public health risks. People most sensitive to air pollution are infants and children, adults aged 65 and older, and those who suffer from such health conditions as respiratory infections, heart and lung (including asthma) disease, and with a history of stroke or diabetes. People who are obese may be at higher risk.

Mandatory Mitigation

Project Actions:

Numerous federal, state, and local regulations relate to air quality in the central Puget Sound region, including those under the *Federal Clean Air Act* and the *Washington Clean Air Act*. For example, there are controls on industrial emissions, indoor and outdoor burning, and vehicle engines and fuels.

Large industries or businesses seeking to expand or bring jobs into the "designated non-attainment area" may be subject to stricter requirements, such as requiring Air Operating Permits, additional installation of emission control equipment or a clean-up regulatory plan to be eligible for funding and grants.

- *Washington Clean Air Act* preserves, protects, and enhances the air quality for current and future generations.

- *Washington's Operating Permit Regulation* (Chapter 173-401 of *Washington Administrative Code (WAC)*), which complies with Title V of the *Federal Clean Air Act*, requires a facility to obtain an Operating Permit from Puget Sound Clean Air Agency if it has the potential to emit any of the following:
 - ✓ More than 100 tons per year of any pollutant, such as nitrogen oxides (nox), volatile organic compounds (vocs), carbon monoxide (CO), sulfur dioxide (SO₂), and particulate matter (PM). Lower thresholds may apply in "non-attainment areas";
 - ✓ More than 10 tons per year of any hazardous air pollutant (HAP), as listed in subsection 112(b) of the federal Clean Air Act; or
 - ✓ More than 25 tons per year of a combination of any haps.
- A facility may also be required to have an Operating Permit if it is subject to certain federal air quality requirements, including:
 - ✓ Title IV Acid Rain Program;
 - ✓ New Source Performance Standards (NSPS); or
 - ✓ National Emission Standard for Hazardous Air Pollutants (NESHAP).

Potential Mitigation

Non-project Actions:

- To reduce the impact of mobile source air toxics from vehicles on human and environmental health, consider the following when siting large industries, business parks, hazardous waste handling facilities and other uses involving significant emissions:
 - ✓ Wind direction
 - ✓ Proximity to other sensitive land-uses
 - ✓ Non-attainment area designation
 - ✓ Parking standards
 - ✓ Parking lot location and landscaping
 - ✓ Traffic demand management
 - ✓ Proximity to transit and stop location and design
 - ✓ Transit connectivity
 - ✓ Pedestrian connections
 - ✓ Safe walking environment
 - ✓ Complete street design
 - ✓ Roadside barriers/tree planting to mitigate ultrafine particles
 - ✓ Preserve open space and other natural features

Project Actions:

- Incorporate trees, parks and open space in compact development and urban design to help reduce and provide buffer against high air temperatures and pollutants (ozone, particulate matter, NO₂, SO₂, and carbon monoxide).
- Modify urban design guidelines to explicitly reduce greenhouse gas emissions by minimizing high automobile usage, such as transit-oriented development, complete streets, mixed-use walkable environment, etc. This will also benefit public health by reducing people's dependence on cars and enabling them to get more physical activity.

Both Project and Non-project Actions:

- Consider the use of parks, urban forests and other green open spaces to buffer sensitive land-uses, such as schools, child care facilities, hospitals, nursing homes, health care facilities, clinics and residential areas, from highways and industries.

Resources

Environmental Protection Agency
Clean Air Act
www.epa.gov/air/caa/

State Implementation Plan
www.epa.gov/airquality/urbanair/sipstatus/overview.html

Puget Sound Clean Air Agency
Regional air quality regulatory agency with jurisdiction over Pierce County
www.pscleanair.org
(800) 552-3565

Information on Tacoma-Pierce County Health Department Wood Smoke Reduction Program:
www.tpchd.org/environment/wood-smoke-reduction-program/
Washington Department of Ecology
www.ecy.wa.gov
(360) 407-6827

Washington Clean Air Act
apps.leg.wa.gov/RCW/default.aspx?cite=70.94

Washington State Operating Permit Regulation
apps.leg.wa.gov/wac/default.aspx?cite=173-401

UW Urban Forestry/Urban Greening Research
Green Cities: Good Health
depts.washington.edu/hhwb/

City of Tacoma Urban Forestry Program
www.cityoftacoma.org/evergreentacoma

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AIR

INDOOR AIR

Impacts

Studies show that people spend 65 to 90 percent of their time indoors, and indoor air can be two to five times more polluted than outdoor air. The young, elderly, chronically ill and those with cardiovascular or respiratory disease, such as asthma or Chronic Obstructive Pulmonary Disease (COPD), are most impacted by poor indoor air quality. Health effects caused by exposure to indoor air contaminants may include eye irritation, respiratory irritation, asthma exacerbation, headaches, nausea/vomiting, dizziness; and, in the case of carbon monoxide or asbestos-containing materials, even death (Zanobetti, Franklin, Koutrakis & Schwartz, 2009; Haley, Talbot & Felton, 2009; Laden, Schwartz, Speizer & Dockery, 2006).

Poor building design, such as inadequacies in ventilation or building maintenance and operation, can affect indoor air quality. Increases or changes in the following types or concentration of indoor air contaminants can also have negative health consequences:

- Volatile organic compounds caused by building materials
- Carbon monoxide
- Mold
- Environmental exposures to smoking, such as tobacco, cigars, etc...

Asbestos is classified as a hazardous air pollutant by the U.S. Environmental Protection Agency. Renovation or demolition of buildings can create the risk of human exposure to asbestos-containing materials (ACM), if legally required procedures for encapsulation or removal are not followed. Exposure risks increase when ACM are disturbed through the activities associated with demolition and renovation. These activities can cause asbestos to break down (become “friable”) into tiny fibers that become airborne, easily inhaled and settled deep into the lungs. Asbestos fibers can cause lung cancer, asbestosis or mesothelioma, a related terminal cancer of the tissue lining the chest cavity, several years after inhalation.

Mandatory Mitigation

Project Actions:

- Comply with the *Washington State Building Codes* for ventilation requirements specific to the proposed development.
- Comply with the Addendum to the *WA Clean Indoor Air Act*, “Initiative 901 or I-901”. This includes, but is not limited to, the prohibition of smoking in all public places and places of employment. Retail stores and retail service establishments must post signs at each entrance and throughout the establishment.
 - ✓ “Public places” include, but are not limited to: schools, elevators, public conveyances or transportation facilities, museums, concert halls, theaters, auditoriums, exhibition halls, indoor sports arenas, hospitals, nursing homes, health care facilities or clinics, enclosed financial institutions, educational facilities, ticket areas, public hearing facilities, state

legislative chambers and immediately adjacent hallways, public restrooms, libraries, restaurants, waiting areas, lobbies, bars, taverns, bowling alleys, skating rinks, casinos, reception areas, and no less than seventy-five percent of the sleeping quarters within a hotel or motel that are rented to guests.

- ✓ “Public place” also includes an area twenty-five feet from entrances, exits, windows that open and ventilation intakes that serve an enclosed area where smoking is prohibited.
- Comply with Tacoma-Pierce County Board of Health, *Environmental Health Code*, Chapter 8 “Smoking in Public Places”, and Chapter 9 “Restriction on Sale, Use, and Availability of Electronic Smoking Devices and Unregulated Nicotine Delivery Products”.
- Demolition and renovation projects must comply with asbestos removal regulations. The Puget Sound Clean Air Agency is responsible for regulating the removal of asbestos containing materials (Article 4: Asbestos Control Standards). The Agency requires the following for any demolition project that may contain asbestos:
 - ✓ Conduct an asbestos survey (if positive, continue with the following steps)
 - ✓ File an asbestos/demolition notification
 - ✓ Verify that all asbestos is properly removed
 - ✓ Properly dispose of the asbestos
 - ✓ Demolish the structure

Potential Mitigation

Both Project and Non-project Actions:

- Wherever feasible, consider the following measures when proposing planning alternatives or development proposals:
 - ✓ Use of low or no-VOC building materials.
 - ✓ Seek U.S. Green Building Council LEED certifications to reduce risk of VOC exposure for workers and occupants.
 - ✓ Install user-friendly ventilation systems in residential units allowing residents to have control over fresh air intake, temperature and humidity to prevent mold, etc.
 - ✓ Install HVAC systems exceeding the minimum “air exchange per hour” requirements under the current code.
 - ✓ Avoid locating trees or large landscape shrubs where they may block intake or exhaust vents.
 - ✓ Consider climate change in design and development.
 - ✓ Install thermostats with hygrometers or digital humidity gauges.
 - ✓ Avoid flat/low pitch roofs and below-grade residential units due to the potential for moisture intrusion.
 - ✓ Develop and monitor long-range maintenance plans for water drainage and collection systems to minimize the risk of water intrusion into homes.
 - ✓ Consider development with conditions that encourage smoke-free multi-family housing and prevent the use of Electronic Smoking Devices.
 - ✓ Include in the design the provision of covered and ventilated ‘smoking areas’ at least 25 feet from entrances, exits, windows that open and ventilation intakes for multi-family housing, motels and hotels and other public places.

- ✓ Avoid locating air intake vents in proximity to heavy traffic, parking or loading areas, flue exhausts and other particulate matter emission sources.
- ✓ For renovation projects, encapsulating asbestos-containing materials and leaving them in place is a viable option.

Resources

Information on LEED Certification:
US Green Building Council: www.usgbc.org

Information on the State Building Code:
fortress.wa.gov/ga/apps/sbcc/Page.aspx?nid=14

For printed copies of the State Amendments and all the Model Codes, contact Washington Association of Building Officials:
www.wabocodebooks.org
(888) 664-9515

Tacoma-Pierce County Health Board Environmental Health Code on Smoking in Public Places:
www.tpchd.org/files/library/c84ed90484dbdfca.pdf

Tacoma-Pierce County Health Board Environmental Health Code on Electronic Smoking Devices: www.tpchd.org/files/library/22094f84d3b140cb.pdf

Health Department Contacts

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WATER

DRINKING WATER

Impacts

A safe and reliable source of drinking water is critical to public health and the economic vitality of Pierce County. To sustain human health, drinking water must be clean and its supply adequate. Both microbial contaminants, such as bacteria, viruses and parasites, and chemical contaminants introduced by point sources and nonpoint sources, can cause the drinking water to be unsafe for human consumption, resulting in water-borne illnesses such as Cryptosporidiosis, Giardiasis, and other gastrointestinal disease (Gorelick, McLellan, Wagner & Klein, 2011; Redman, Nenn, Eastwood & Gorelick, 2007; Hendryx, Fedorko & Halverson, 2010).

Millions of dollars have been spent on planning, infrastructure and operations of public water systems serving Pierce County residents. Significant efforts should be made to ensure that the county water systems remain financially and operationally viable. Under the Growth Management Act, the Pierce County Code and the Health Department's Environmental Health code, all land-use proposals must prove that an adequate water supply is available concurrent with the timing of development in order to receive approval. In other words, land-use development and growth cannot occur without demonstrating the availability of adequate water supply.

Mandatory Mitigation

Project Actions:

To maintain an efficient, safe and cost-effective system of delivering drinking water, all efforts should be made to address water adequacy, potential impacts to water sources, and the proper management of public water systems through statutes and regulations. However, some land-use regulations unintentionally impair the operation of water systems, thus making management of water systems increasingly costly and time-consuming. For example, water storage and/or treatment facilities frequently have to go through lengthy Non-conforming or Conditional Use permitting processes causing additional expense and delay to vital water system projects or restricting the ability to adequately protect system infrastructure.

Lead agencies considering land-use proposals should be aware of the breadth and the variety of regulations addressing drinking water supplies:

- The authority addressing public water systems can be found in *RCW* 70.119 and 70.119A. Additionally, *WACs* 246-290 through 246-296 mandate the management, operation and health standards for water systems.
- Adequate water supply for land-use development is required through Growth Management land and can be found in *WAC* 365-196-825.
- Local regulations, such as Chapter 3 of the Tacoma-Pierce County Health Board's *Environmental Health Code*, address requirements for water supply in the land development process.

Potential Mitigation

Non-project Actions:

- Associated with any land-use proposal should be the provision to ensure or maintain a viable supply of drinking water concurrent with the timing of development. Those measures should include, but not be limited to:
 - ✓ The proper long-range planning for water supply and distribution to meet the needs of the proposed development; and
 - ✓ The creation of policies and processes that allow for the appropriate authorities to review land-use decisions in light of current or potential water supply issues.
- Consider establishing a process for appropriate authorities to determine land-use zoning changes and density increases in consultation with local water purveyors and/or utilities; and a mechanism to ensure water adequacy is checked prior to land-use or building permitting.
- Determine and implement measures to ensure the long-term viability of small water system that provides drinking water outside of large municipal areas.

Resources

Washington State Department of Health Information on Drinking Water Systems
www.doh.wa.gov/CommunityandEnvironment/DrinkingWater.aspx

Tacoma-Pierce County Health Board Environmental Health Code on Drinking Water
www.tpchd.org/files/library/5ff8b3f6a0d12d23.pdf

Health Department Contact

Brad Harp
Bharp@tpchd.org
(253) 798-2851

SURFACE WATER

Impacts

Pierce County's marine shorelines, lakes, rivers and streams are increasingly valued as sources of both recreation and commercial uses. More demand is being placed on our shorelines and freshwater resources by citizens seeking recreation, and by fishing and shellfish industries. Commercial shellfish harvesting is increasingly becoming a major industry in Pierce County. Equally critical to the economic vitality of Pierce County, improved marine and freshwater quality helps maintain and increase shoreline property value.

The increased use of shorelines poses a great threat to public health through exposure to pathogens and other contaminants present in surface waters. Recent closing of area beaches and lakes due to pollution and imminent health impacts demonstrate the need for a comprehensive effort to protect and enhance surface water resource.

Mandatory Mitigation

Both Project and Non-project Actions:

- Lead agencies proposing land-use alternatives or development proposals should be aware of the breadth and variety of regulations that protect surface waters:
 - ✓ The controlling authority addressing waters of the state is *RCW 90.48*.
 - ✓ Additional requirements addressing stormwater quality and its impact on lakes, streams, and marine waters include *WACs, 173-201A and 173-200*. Contamination is no longer allowed to enter lakes, waterways and marine waters. Best management practices for the control of surface water contamination have been developed by state and local permitting agencies for use in land-use development.

Potential Mitigation

Project Actions:

- Provisions to maintain or improve the quality of surface water bodies should be associated with any development proposal. Those measures should include, but not be limited to:
 - ✓ Improvement of water quality;
 - ✓ Development and monitoring of long-range maintenance plans for surface water management;
 - ✓ Adoption of "best management practices" to eliminate potential sources of contamination;
 - ✓ On-going investigation, monitoring and enforcement efforts that address contamination of stormwater runoff; and
 - ✓ Development of mechanisms for the infiltration of good quality stormwater to recharge groundwater systems.

- Consider incorporating Low Impact Development practices and green infrastructure into the proposed development and design, such as the use of rain gardens and rainwater harvesting, to help reduce stormwater runoff and improve drainage as required under the National Pollutant Discharge Elimination System permit program in urbanized areas.
- Consider the use of natural lawn care practices as a maintenance and operation best practice.
- Consider Local Source Control programs (Pierce County Sewer Utility, Tacoma Sewer Utility, Tacoma-Pierce County Health Department) providing both regulatory (Pierce County; City of Tacoma) and non-regulatory (Health Department) guidance to the business community to minimize potential impacts to surface water.
- Consider the adoption of large-animal keeping practice regulations to protect surface waters from the harmful impact of pathogens and nutrient loading from agriculture.
- Implement processes to minimize the impact of sewage outfalls and failing septic systems on surface water bodies.

Resources

Pierce County Information on Low Impact Development:

www.piercecountywa.org/lid

(253) 798-2725

Pierce County Information on Stormwater and Flooding:

www.co.pierce.wa.us/pc/abtus/ourorg/pwu/about/stormfloodmenu.htm

Tacoma-Pierce County Health Department information on surface water:

tpchd.org/environment/surface-water-lakes-beaches-shellfish/

List of regional local source control partners:

www.ecy.wa.gov/programs/hwtr/lsp/procon.html

Pierce County Information on Water Quality and Watersheds Services:

www.co.pierce.wa.us/pc/services/home/envIRON/water/wqws/wqwsmain.htm

City of Tacoma Surface Water Information:

www.cityoftacoma.org/Page.aspx?nid=190

Tacoma-Pierce County Health Department Information on Natural Yard Care:

www.tpchd.org/environment/healthy-environment/natural-yard-care/

Health Department Contact

For local source control and natural yard care, contact:

John Sherman

JSherman@tpchd.org

(253) 798-6528

For surface water in general, contact:

Ray Hanowell

RHanowell@tpchd.org

(253) 798-2845

GROUND WATER

Impacts

The majority of the citizens of Pierce County rely on groundwater as their source of drinking water and for commercial purposes. Maintaining an ample clean source of drinking water is vital to protecting public health and welfare, as well as the economic vitality of Pierce County.

Pierce County citizens, businesses and industries benefit from an ample and clean source of groundwater. These benefits are readily evident in decreased incidents of waterborne disease and illness, and healthcare costs.

Mandatory Mitigation

Both Project and Non-project Actions:

- Lead agencies proposing land-use alternatives should be aware of the breadth and variety of regulations in place to protect groundwater resources. Numerous statutes and regulations address the contamination of groundwater. The most relevant ones include:
 - ✓ The controlling authority addressing groundwater contamination is *RCW 90.48*. For example, *WAC 173-340* addresses the investigation and remediation of groundwater contamination as part of the *Model Toxics Control Act*.
 - ✓ Chapter 4 of the Tacoma-Pierce County Health Board's *Environmental Health Code* addresses the investigation and remediation of groundwater contamination through the regulation of Underground Storage Tanks.
 - ✓ *Tacoma Municipal Code 13.09*, the South Tacoma Groundwater Protection District, establishes hazardous substance management standards within a significant portion of the City of Tacoma.
 - ✓ The *Pierce County Code* provides regulations on Aquifer Recharge Area and Wellhead Protection Area which place limitations on land-use and address groundwater contamination.
 - ✓ Section 1424(e) of the Safe Drinking Water Act provides a tool for groundwater protection through the establishment of the Central Pierce County Sole Source Aquifer.
 - ✓ State and local agencies can establish groundwater protective measures as an adjunct to the Sole Source Aquifer designation.

Potential Mitigation

Project Actions:

- Preventing or avoiding impacts is the most cost-effective when compared to other mitigation measures, such as cleanup, or implementing costly water quality treatment methods. In many cases, it is not practical to fully mitigate impacts to water resources.
- Implementation of a Local Source Control Programs (Pierce County Sewer Utility, Tacoma Sewer Utility, Tacoma-Pierce County Health Department) can provide both regulatory (Pierce County; City of Tacoma) and non-regulatory (Health Department) guidance to the business community to minimize potential impacts to groundwater.
- Consideration of transportation alternatives to minimize the aerial deposition of contaminants, such as lead, arsenic and nitrogen, into surface water bodies.
- Associated with any land-use proposal should be the provision for protecting the groundwater resource. Those measures should include, but not be limited to:
 - ✓ The proper storage, handling and disposal of hazardous materials;
 - ✓ The elimination or reduction of hazardous materials from processes, whenever possible;
 - ✓ The appropriate storage, conveyance and treatment of stormwater;
 - ✓ Minimizing the use of fertilizers, pesticides and herbicides, or increasing the use of non-toxic alternatives;
 - ✓ The proper location of commercial facilities generating hazardous substances beyond vulnerable groundwater resource areas;
 - ✓ The proper location, construction and maintenance of water wells; and
 - ✓ The inclusion of water resource users and managers, such as water utilities, in the planning efforts to protect the groundwater supply.

Non-project Actions:

- Encourage sustainable growing practices in urban and rural farmlands, including community gardens, to protect water quality.

Resources

Tacoma-Pierce County Health Department Long-Term Groundwater Monitoring Program:
www.tpchd.org/environment/groundwater/long-term-groundwater-monitoring-program/
(253) 798-2845

South Tacoma Groundwater Protection District:
www.tpchd.org/environment/groundwater/south-tacoma-groundwater-protection-district/

US Environmental Protection Agency Safe Water Drinking Act:
water.epa.gov/lawsregs/rulesregs/sdwa/index.cfm

Health Department Contacts

For groundwater in general, contact:

Brad Harp

Bharp@tpchd.org

(253) 798-2851

For local source control and South Tacoma Groundwater Protection District, contact:

John Sherman

jsherman@tpchd.org

(253) 798-6528

LAND

Hazardous Materials

Impacts

Our land can be contaminated by historic releases of chemicals, leakage of hazardous materials from underground storage tanks (USTs), the manufacture of illegal drugs, dumped oils and fluids from vehicle maintenance areas, and improper management and disposal of hazardous materials at commercial or industrial facilities. In some cases, contaminants may migrate laterally and/or vertically beyond the shallow subsurface or property boundary, resulting in the contamination of groundwater, adjacent properties and underground utilities.

Excavation and other construction activities associated with development can lead to exposure to contaminated media via direct contact, inhalation and ingestion. Exposure to contaminated media, including soil and groundwater, may result in acute and/or chronic negative health impacts; posing health risks to residents, employees and visitors. In addition, proximity to the waterfront presents the risk of spreading contaminants to the marine shoreline and Puget Sound. These threats to environmental and public health may impede economic development, and further create long-term negative impacts on community welfare.

Besides physical health impacts, studies indicate that the presence of contaminants in toxic waste sites can increase the stress level of nearby residents and affect their mental health (Yang & Matthews, 2010).

Mandatory Mitigation

Project Actions:

- Reporting and cleanup requirements for contaminated sites should comply with Washington State Department of Ecology's *Model Toxics Control Act (MTCA)*, Chapter 173-340 WAC.
- Underground storage tanks (UST) operation, decommissioning and site cleanup are regulated by Washington State Department of Ecology (Chapter 173-360 and 173-340), Tacoma-Pierce County Health Department (Tacoma-Pierce County Health Board, *Environmental Health Code*, Chapter 4, Underground Storage Tanks, Board of Health Resolution 2010-4225) and the Fire Marshal (*International Fire Code*).
- Clandestine Drug Lab investigation and remediation requirements are regulated by the local health district as authorized by RCW 64.44 and WAC 246-205.

Potential Mitigation

Project Actions:

- Operations at the ASARCO smelter in Ruston distributed arsenic and, to a lesser degree, lead throughout the region. The affected area is known as the Tacoma Smelter Plume which extends in Pierce County from the Gig Harbor area through Ruston, and North Tacoma through Fircrest, University Place, Lakewood, Steilacoom, and to Lakewood and DuPont.

The Tacoma Smelter Plume also extends as far north as Seattle, as far south as Lacey, and as far east as Kent, Mercer Island, and Bellevue. Elevated levels of arsenic and lead may be found in soils in these areas, generally impacting surface soils (0"–18" 1 to 2 feet). Elevated arsenic levels are most commonly found in areas that have not been recently disturbed or developed. Sites Properties undergoing development grading in the affected area Tacoma Smelter Plume should be sampled. Site development Local jurisdictions may require additional cleanup or physical controls to minimize the impacts of the contaminated soil. Tacoma-Pierce County Health Department and/or The Department of Ecology can provide information regarding soil sampling, cleanup, and best management practices, advice for property owners doing grading within the Tacoma Smelter Plume and developers for site remediation

- Before any development can proceed, all environmental issues of concern, including USTs, contaminated soil/groundwater and unremediated hazardous material spills, whether suspected or confirmed, must be investigated and remediated in accordance with existing local, State, and Federal standards. Land-use permits should not be issued or placed on hold if contaminated media (soil or water) exist or are discovered on the property proposed for development. In many cases, environmental concerns should be identified during due-diligence investigations prior to site development. Unanticipated discoveries of hazardous materials during site development will require a response conforming to local, State and Federal requirements.

Non-project Actions:

- Encourage redevelopment of contaminated (or potentially-contaminated) properties, such as brownfields, when siting new infrastructure or other public/private facilities.
- Development provides opportunities for mitigation of contaminated media. When contaminated sites remain undeveloped, exposure risks remain and contamination may spread offsite to groundwater, surface water and Puget Sound. In contrast, when contaminated sites are developed, existing regulations require that contamination be either contained on-site or remediated through soil excavation, disposal and replacement, thereby mitigating the environmental hazards.
- An inventory of contaminated sites should be developed for use by planners or developers to address contamination issues in the appropriate timeframe. Special attention should be paid to specific low-income areas which may sometimes lie beyond the designated clean-up sites. The cumulative impacts from other additional sources of pollution have further exacerbated the environmental impacts in those underserved areas.

Resources

Department of Ecology Tacoma Smelter Plume Toxic Clean Up Program:
www.ecy.wa.gov/programs/tcp/sites_brochure/tacoma_smelter/2011/ts-hp.htm
Staff contact: Elizabeth Weldin
elizabeth.weldin@ecy.wa.gov
(360) 407-7094

Tacoma Smelter Plume Model Remedies Guidance:
www.ecy.wa.gov/programs/tcp/sites_brochure/tacoma_smelter/2011/techAssist.html

Tacoma-Pierce County Health Department Tacoma Smelter Plume Dirt Alert Program:
www.tpchd.org/environment/healthy-environment/dirt-alert/

Tacoma-Pierce County Health Department Information on Underground Storage Tank Removal:
www.tpchd.org/environment/investigation/underground-storage-tank-removal/

Tacoma-Pierce County Health Board Environmental Health Code on Underground Storage Tank:
www.tpchd.org/files/library/4072fd91078f3d1b.pdf

Tacoma-Pierce County Health Department Information on Infectious Waste Management:
www.tpchd.org/environment/waste-management/infectious-waste-management/

Tacoma-Pierce County Health Board Environmental Health Code on Infectious Waste:
www.tpchd.org/files/library/73ad317b1e66a48d.pdf

Health Department Contacts

For underground storage tanks, contact:
Rob Olsen
ROlsen@tpchd.org
(253) 798-2855

For toxic spill and site clean-up, contact:
Sharon Bell
SBell@tpchd.org
(253) 798-2891

For Tacoma Smelter Plume Dirt Alert Program and brownfields, contact:
John Sherman
Jsherman@tpchd.org
(253) 798-6528

UTILITIES

WATER WELLS

Impacts

The majority of the public within Pierce County obtain their domestic water supply through professionally managed Public Water Systems. However, in some areas of the County where public water is not available, domestic water wells need to be constructed into an aquifer to access groundwater for domestic purposes. The use of domestic wells can be an adequate and reliable source of water, but requires significant oversight in the development of these types of water supplies.

Poorly sealed or constructed wells and wells that draw water from shallow aquifers are at greatest risk of contamination (Sanders et al, 2012). Rain infiltrating through soil can carry nitrate from fertilizers, manure and sewage into aquifers. In addition, poor stormwater runoff management from development can introduce many additional biological and chemical contaminants to groundwater.

Drought can result in lower water levels and more concentrated contaminants. Nitrate is typical of a contaminant entering into the groundwater system in urban and rural areas. Elevated nitrate levels can indicate that other contaminants, such as bacteria, viruses and chemicals, may also be present. Nitrate levels above 5 parts per million (ppm) are a concern. The highest level allowed in drinking water is 10 ppm. Babies and very young children are most vulnerable to nitrate poisoning (methemoglobinemia) from drinking water with high levels of nitrates (Aschengrau et al., 2008). Symptoms may include shortness of breath, headaches, fatigue and bluish skin. High nitrate levels in female adults may increase the risk of spontaneous abortion or certain birth defects (Aschengrau et al., 2008).

Should a water well become unusable or meet the definition of an abandoned well, it can be a conduit for contamination to the aquifer. The Health Department works with public water systems to ensure that they continue to provide a safe and reliable source of drinking water.

Mandatory Mitigation

Project Actions:

- Most public water systems withdraw water through large water wells. Well construction and maintenance is governed by *RCW 18.04* and *WAC 173-160*.
- Prior to approval, any proposed development must comply with Tacoma-Pierce County Board of Health, *Environmental Health Code*, and Chapter 3 (Resolution 2010-422) for drinking water adequacy.
- Should the development proposal contain wells, site inspection, well construction, and water quality approval are required to comply with Tacoma-Pierce County Board of Health, *Environmental Health Code*, Chapter 3 (Resolution 2010-422).

- To protect the groundwater from possible contamination, any abandoned wells known or discovered must be properly decommissioned per WAC 173-160 and Tacoma-Pierce County Board of Health, *Environmental Health Code*, and Chapter 3 (Resolution 2010-422). The decommissioning of all water wells in Pierce County must be approved by Tacoma-Pierce County Health Department.

Potential Mitigation

Project Actions:

- If any well is considered suitable for reuse and incorporation into the development proposal, Tacoma-Pierce County Health Department should be consulted to determine necessary compliance with WAC 173-160 and Tacoma-Pierce County Board of Health, *Environmental Health Code*, Chapter 3 (Resolution 2010-422).

Non-project Actions:

- Consider efforts to ensure concurrency with the County's Coordinated Water System Plan and city's Capital Facilities Plan to support any proposed development.
- Consider establishing a process to evaluate the impacts of current and proposed water wells on the resource, and establish growth management practices based on the resulting data.

Resources

Pierce County Watershed Councils
www.co.pierce.wa.us/index.aspx?NID=1859

Minimum Standards for Construction and Maintenance of Wells: Chapter 173-160 WAC
apps.leg.wa.gov/wac/default.aspx?cite=173-160

Tacoma-Pierce County Health Department Drinking Water and Wells:
www.tpchd.org/environment/drinking-water-wells/

Health Department Contacts

Tacoma-Pierce County Health Department Drinking Water Program
EHdrinkingwater@tpchd.org
(253) 798-6470

For well decommissioning or reuse, contact:
Linda Sorrell
EHsepticssystems@tpchd.org
(253) 798-6049

SEWER AND SEPTIC SYSTEM

Impacts

Proper wastewater treatment and disposal from a project is critical to ensure that no adverse impact occurs that would harm the environment. If domestic wastewater is not properly disposed, chemical and biological contaminants will negatively affect both surface and groundwater. The exposure to these contaminants can be detrimental to our water resource, wildlife habitats and humans.

In certain parts of the County, public sanitary sewage systems are not available. Under those circumstances, "on-site septic systems" (OSS) may be used as a means of sewage disposal for any proposed development. These systems consist of a septic tank, possibly a treatment device, allowing the effluent flows to a soil dispersal component for subsurface soil treatment and disposal. Septic tanks, mostly made up of large concrete, metal or plastic vaults, can deteriorate over time. If abandoned and left to deteriorate, septic tanks may collapse and can create a safety hazard.

Mandatory Mitigation

Project Actions:

- Any domestic wastewater disposal by way of either sanitary sewer or OSS is subject to Health Department verification and/or approval.
- Should OSS be required or an abandoned OSS be located in the development proposal, the following mitigation measures apply:
 - ✓ The Health Department reviews any proposed OSS with design flows less than 3500 gallons per day. Any proposed OSS meeting the above criteria must meet density, lot size and soil conditions in compliance with *WAC 246-272A* (Washington State Board of Health *On-site Sewage System Regulations*) and Tacoma-Pierce County Board of Health, *Environmental Health Code*, Chapter 2 (Resolution 2010-422).
 - ✓ The Washington State Department of Health reviews and approves proposals for Large On-site Sewage System (LOSS) with design flows greater than 3500 gallons per day. Any proposed LOSS must meet the requirements of and be in compliance with *WAC 246-272B* (Large On-Site Sewage Regulations).
 - ✓ The Health Department requires any unneeded or surplus septic tank be pumped by a certified septage hauler, the tank filled with soil, and a decommissioning application completed and submitted to the Health Department per Tacoma-Pierce County Board of Health, *Environmental Health Code*, Chapter 2 (Resolution 2010-422) and *WAC 246-272A* (Washington State Board of Health On-site Sewage System Regulations).

Potential Mitigation

Project Actions:

- Consider re-using components of existing OSS by bringing them up to code standards, if these components can serve the proposed development. The Health Department should be contacted to determine compliance with WAC 246-272A (Washington State Board of Health On-site Sewage System Regulations) and Tacoma-Pierce County Board of Health, *Environmental Health Code*, Chapter 2 (Resolution 2010-422).

Non-project Actions:

- Consider efforts to ensure concurrency with County's or specific city's sewer utility program or Capital Facilities Plan to support any proposed development.

Resources

Washington State Board of Health On-site Sewage System Regulations: WAC 246-272A
apps.leg.wa.gov/wac/default.aspx?cite=246-272a

Tacoma-Pierce County Health Department Information on Septic Systems:
www.tpchd.org/environment/septic-systems/

Tacoma-Pierce County Health Board Environmental Health Code on On-Site Sewage:
www.tpchd.org/files/library/54215b448ded486e.pdf

Health Department Contact

For decommissioning or reuse of abandoned on-site septic system, contact:

Linda Sorrell

EHsepticssystem@tpchd.org

(253) 798-2885

SOLID WASTE MANAGEMENT

Impacts

Poor management of solid wastes (e.g., commercial and residential garbage, recyclables and demolition debris) presents risks to human health and the environment. These risks include increased vector populations (rats and flies), disease transmission, and impacts to people via odors or releases to the environment. In addition, poor management of solid wastes can present aesthetic issues in the community. Tacoma-Pierce County Health Department is responsible for regulating solid waste management facilities, such as landfills, composters, recyclers and transfer systems, throughout Pierce County.

Mandatory Mitigation

Project Actions:

- Pierce County, City of Tacoma and most cities and towns have codes describing solid waste collection requirements, as well as codes establishing the mismanagement of solid waste as a nuisance. Tacoma-Pierce County Board of Health, *Environmental Health Code*, Chapter 28 outlines Solid Waste Handling Standards.
- Washington State law and regulation (WAC Chapter 173-350 and 173-351; RCW 70.95)

Potential Mitigation

Project Actions:

- Consider the incorporation of the following practices in reviewing projects, such as:
 - ✓ Mandatory garbage collection
 - ✓ Every-other-week garbage collection
 - ✓ Mandatory provision of recycling and/or organic waste for commercial and multi-family development
 - ✓ Mandatory suitable access for pickup of recyclables by haulers
 - ✓ Recycling/re-use of demolition and construction waste associated with site development (rather than disposal)
 - ✓ Support for food composting

Non-project Actions:

- Apply the solid waste management policies affecting Tacoma, Pierce County, and the cities and towns described in the Tacoma-Pierce County *Solid Waste Management Plan* (2008), a 20-year planning tool for the management of garbage, recycling, and composting in Pierce County.

Resources

Tacoma-Pierce County Solid Waste Management Program:
www.co.pierce.wa.us/pc/abtus/ourorg/pwu/solidwaste/abt/library.htm

Tacoma-Pierce County Health Board Environmental Health Code on Solid Waste Handling Standards:
www.tpchd.org/files/library/fd3c8fa15aa45748.pdf

Health Department Contact

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Jsherman@tpchd.org
(253) 798-6528

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APPENDIX

SUMMARY OF HUMAN HEALTH IMPACTS

Topic	Human Health Impacts							
	Heart Disease	Diabetes	Respiratory/ Lung Disease	Gastro-intestinal Disease/ Waterborne Illness	Obesity	Stroke	Accident/ Injury/ Bio-chemical Hazard	Mental Illness
Land-Use								
Layout and Density	x	x	x		x	x	x	x
Placemaking	x	x			x	x	x	x
Air								
Outdoor Air	x	x	x			x		
Indoor Air	x	x	x					
Water								
Drinking Water				x				
Surface Water				x				
Ground Water				x				
Land								
Hazardous Materials			x	x			x	x
Utilities								
Water Wells				x			x	
Sewer and Septic System				x			x	
Solid Waste Management				x			x	