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INTERNATIONAL DISTRICT
HOUSING ALLIANCE

**EPA: CARE Level I Final Report
International District CARE Project**



Community elder shares her perspectives at the first CARE partner meeting, 2005

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Better Housing, Happier Lives, Stronger Communities

Grantee: International District Housing Alliance

Project location: Seattle's Chinatown-International District, Seattle, WA – King County

Project title: International District CARE Project

Grant period: October 1, 2005 to September 30, 2007

Project Manager: Joyce Pisananont

EPA Project Officer: Sally Hanft

Personal Reflection:

Reflecting on the past two years of the ID CARE project, it is evident that our community has had many wonderful successes, as well as a fair share of challenges. Our successes included a tremendous amount of culturally relevant outreach and education and the development of a strong core of community leadership amongst limited English speaking populations. Our greatest challenges were maintaining the momentum of the work in the face of organizational restructuring (in year 2) and growing anti-immigrant sentiments nationwide that inhibited civic participation on the part of our immigrant youth and elders. Perhaps our greatest area for improvement is the partnership development piece. Since 2005, IDHA has successfully garnered many new partnerships, but needs to strengthen our project advisory committee so as to be truly representative of the multiple community stakeholders that are essential for driving the project forward.

This became most clear during our recent CARE National Training in Atlanta, GA. In listening to the successes and challenges of other CARE grantees, it became evident where the ID community's strengths lay, and where we could have done many things differently. Most specifically, we were inspired by the model of community leadership exemplified by the West Oakland grantees, and hope to learn from their expertise through an upcoming site visit to their neighborhood in 2008. Similarly, in listening to the innovative community education and organizing models of the other grantees, it became evident that we have much to learn and much that we can implement in our International District neighborhood.

What was most striking was the lack of community based organizations represented in the room. It seems that in the newest round of grantees, many were institutions (educational and governmental), and not community based organizations that have the expertise in community mobilization and implementing citizen-driving strategies. As a representative of a community based organization, this was a bit surprising – and alarming. In many ways, it raises concerns for me about how we as CARE communities are implementing models of civic participation, and whether or not we are truly investing in the capacity of our community based organizations (who have the expertise and the experience) to facilitate such important environmental justice work. My hope is that a greater investment will be made into supporting organizations such as the International District Housing Alliance.

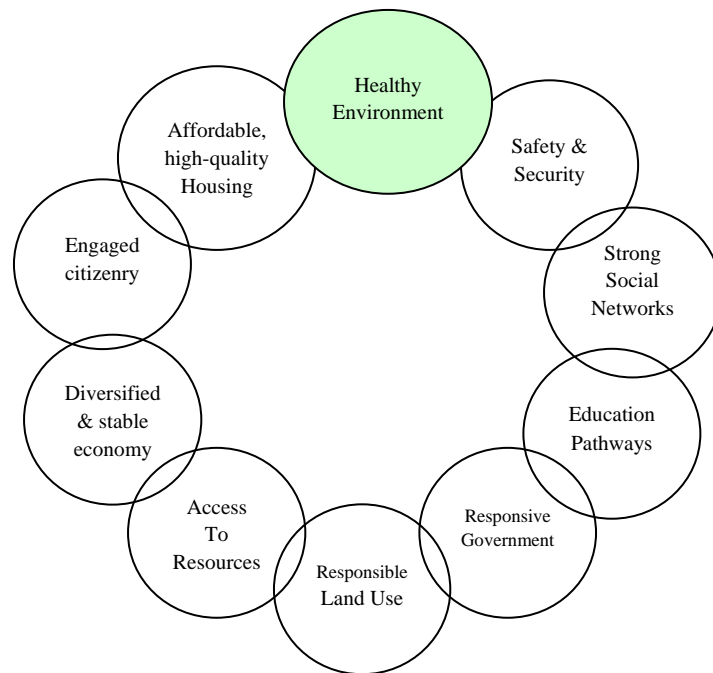
As we embark upon a new phase in our International District CARE project, I look forward to helping to shape the Environmental Protection Agency's efforts to meaningfully engage communities in improving their environment.

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Section I: Partnerships

IDHA and our partners have always looked at our work holistically, making sure that our approach was cognizant of numerous social and economic issues as they intersect with the environmental concerns specific to the International District neighborhood. This multi-faceted approach is something that has contributed greatly to our success, and at times, also presented us with a number of challenges.

Two years ago, the International District community began a community visioning process called Vision 2030, a roadmap for community planning and strengthening overall community health. In summary, the elements of this Vision 2030 plan included the following elements:



Creating a healthy environment intersected with many other elements, including issues of safety, quality housing, responsible land use and economic development. Thus, identifying just a few priorities that specifically focused on environmental toxics was challenging.

IDHA began our community assessment and prioritizing phase through a series of community surveys (General Interest Surveys conducted by youth and paid for by Seattle Public Utilities). As shared in our Year 1 Report (attached), General Interest Surveys indicated that many businesses were most concerned about public safety, follow by solid waste prevention and public health. As for the residents, they were most interested in workshops on indoor air quality, followed by water quality and household hazardous waste. As for the visitors, they expressed most interest in workshops on water quality, followed by transportation and public health.

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ComNETsm monitoring allowed IDHA to further investigate 'hot spots' or areas of concern for specific toxics within our community – specifically those related to solid waste, air quality indicators and general issues related to built environment.

Ultimately, in prioritizing issues and determining a toxics reduction strategy (to be addressed through a Level II project), it became clear that public safety trumped all other environmental toxics. In response to this, the project advisory committee was able to complete a mapping process that helped other stakeholders to better understand the relationship between toxics and public safety, and that addressing one could address the other. Please see attached map.

Strength of the Partnerships

When the International District first began the ID CARE project, there were 19 partners who sat at the table. Over time, additional organizations and institutions have been added, totaling over 30 partnering agencies who provide a myriad of resources, including technical assistance and educational opportunities, access to clients (such as businesses and residents), in-kind resources such as educational materials and free giveaways and assistance in leveraging financial resources. Partners also played an integral role in helping to build the network of partners – introducing IDHA to additional partners with additional resources.

IDHA served as the lead agency for this partnership – acting as the conduit to community for a multitude of governmental agencies and educational institutions. Throughout the project, IDHA was able to help guide and shape effective outreach methods for engaging community members in dialogues about Environmental Justice. Most importantly, our agency helped to build the leadership capacity of residents and other local community stakeholders. Partnering agencies that were most active were:

- Seattle Public Utilities
- Puget Sound Clean Air Agency
- University of WA
- Sustainable Seattle
- Seattle/King County Public Health
- WA Department of Health
- Chinatown ID Business Improvement Area
- American Lung Association
- Seattle Chinatown ID Preservation and Development Authority

IDHA has over 30 years of experience in organizing community members, which proved key to building trusting relationships with residents and business owners who were not previously involved in the environmental movement. For many of our institutional partners (such as monitoring agencies or local government), this was key to helping them to achieve their goals of providing services to vulnerable populations. Our expertise in leadership development proved invaluable in engaging young and elderly leaders (the majority of whom are limited English speaking) in efforts to create community change and improve the health of their neighborhood using the following strategies:

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- Culturally relevant methods for outreach and education;
- Acknowledging the community's concerns and making sure our efforts addressed those concerns through multiple avenues;
- Acknowledging community limitations with regard to concerns about anti-immigrant sentiment, poverty and existing forms of oppression that prevent them from participating;
- Acknowledging their leadership and celebrating their successes;

The ID CARE Project collaborative placed a tremendous amount of trust in the leadership of IDHA, but as a result, lacked clear structure and consistency as a cohesive group. In other words, it felt as if IDHA was the hub in the midst of many projects and activities, as opposed to a collective group that worked together with a unified plan. This was particularly challenging in year 2 of the grant, when IDHA was undergoing major organizational changes; The structure of our collaborative will be addressed in our Level II grant. Despite these challenges, we are truly appreciative of the many wonderful partnerships that we were able to develop, which were catalyzed by the EPA CARE grant. The pre-existing partnerships (prior to awarding of EPA CARE Level I) remained the strongest and most fruitful relationships, though many new partners were able to contribute a great deal to our toxics reduction efforts.

Perhaps our greatest challenge with regard to partnerships was helping to build the capacity of other community based organizations within the neighborhood. Two factors served as barriers: 1) inadequate resources to dedicate for the involvement of other CBOS (as subcontract amounts were grossly inadequate to cover the amount of time required; and 2) perception by CBOs that environmental concerns fell under the scope of work of the IDHA alone, and that their agency missions were not inclusive of environmental toxics reduction work. Both of these issues are also being address in our CARE Level II grant through the increase of subaward amounts to partnering CBOs, as well as through a greater alignment of priorities and missions.

A note about our program monitor: Sally was fantastic. She served as a great conduit for information AND was a fantastic person for making sure we stayed on track. She was flexible, open minded and asked good questions – but always trusted the knowledge of our community. She was creative in helping us to access resources and provided additional opportunities for our young leaders to be able to grow so that their experiences were not just limited to CARE, but that they would also be able to access other venues for professional development available through the Environmental Protection Agency.

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Section II: The Project

Year two of our CARE Level I grant proved to be a critical year in bringing together a tremendous amount of information and feedback from a multitude of stakeholders. As shared earlier (and in our EPA CARE Level I – Year 1 report, attached), IDHA embarked upon the following activities for identifying our toxic risks and setting priorities:

Significant Activities	Outcomes	Tools/Resources Used	Comments/Notes
GOAL 1: Build coalition to address environmental toxins			
Coordinate project partner teams and Build new partnerships	<ul style="list-style-type: none"> Regular communications via email and quarterly partner updates; Partner trainings on cultural competency; Annual partner gatherings; Individual partner meetings on regular basis; Continual outreach to new partners Established advisory committee 	<ul style="list-style-type: none"> Email for partner updates; Cultural competency trainer through Seattle/KC; Meeting Wizard for meeting coordination; 	GREATEST OUTCOME: Increasing number of partnerships and resources leveraged; eg – air quality study with UW; brownfields study with King County LWMP; outreach and education to over 1000 individuals
Evaluate project partnerships	<ul style="list-style-type: none"> University of WA PhD candidates conducted evaluation with partners and participants; Multiple focus groups and 40+ interviews conducted; 	<ul style="list-style-type: none"> Partnership Toolbox used as survey evaluating strength of partnership 	GREATEST OUTCOME: Evaluation provided in-kind, with funds from EPA being used as incentives for interview participants and payments for translation and transcriptions
Coordinate Community meetings	<ul style="list-style-type: none"> Multiple community meetings held: 3/29/06; 5/16/07; 6/27/07; 7/25/07 Numerous building meetings held throughout duration of project 	<ul style="list-style-type: none"> Community meeting tool designed by UW School of Public Health (binder to be provided) 	GREATEST OUTCOME: Community meetings successfully engaged stakeholders in discussions about environmental toxics and strategies for addressing them;
Coordinate with other CARE projects	<ul style="list-style-type: none"> Worked with Pacoima Beautiful to submit proposal for EJ & youth presentation; Connected with other communities in August/ September regarding their models for leadership and advisory councils; 	<ul style="list-style-type: none"> Joint proposal with Pacoima Beautiful facilitated by EPA Staff, Judith Lee 	GREATEST OUTCOME: knowledge of other project’s activities, strengths and challenges

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Significant Activities	Outcomes	Tools/Resources Used	Comments/Notes
GOAL 2: Increase community awareness			
Develop multi-lingual workshops and trainings	<ul style="list-style-type: none"> • Extensive education to residents, building to building • Extensive education to over 150 businesses • Participation in multiple community fairs/festivals • Coordination of EJ Conference – BE Healthy • Partnered with other agencies on their projects regarding indoor air quality, climate, etc. 	<ul style="list-style-type: none"> • Multi-language materials available through partnering agencies 	GREATEST OUTCOME: Developed strong base of community educators (youth and elders) and relationships with over 1000 individuals (both residents and businesses)
Develop multi-lingual outreach materials	<ul style="list-style-type: none"> • Multiple materials created for community benefit, on topics such as pesticides, indoor and outdoor air quality, recycling, etc. Materials include a calendar, handouts and brochures; • <i>International Examiner</i> edition published in September 2007 focusing on APIs and the environment. • Brownfields study produced in English, but made available to non-profit/for-profit community developers who speak English; • Partnerships created with multiple agencies to assist with translation of their materials and ensuring cultural relevance of materials. 	<ul style="list-style-type: none"> • Some materials created were based on materials created from partnering agencies; • Brownfields used multiple tools for historical analysis; 	GREATEST OUTCOME: Developed a series of materials that can be used for multiple occasions and are available to the community easily;
Coordinate Experiential Learning Activities	<ul style="list-style-type: none"> • Numerous learning activities made available to community through trips with USDA Forest Service, Seattle Public Utilities, Duwamish River Clean-up Coalition, Dept of Fish & Wildlife, etc. 	<ul style="list-style-type: none"> • N/A 	GREATEST OUTCOME: Experiential learning activities helped community members (many of whom are pre-literate) to better understand toxins; it also helped to build stronger relationships between community and partners;

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Significant Activities	Outcomes	Tools/Resources Used	Comments/Notes
GOAL 3: Develop Community Goals			
Coordinate Community Meetings	<ul style="list-style-type: none"> • See above 	<ul style="list-style-type: none"> • See above 	See above
Creation of Advisory Council	<ul style="list-style-type: none"> • Advisory Council created in 2007, with four meetings held from January to September. 	<ul style="list-style-type: none"> • Contacted other CARE communities to learn about their advisory council structure 	GREATEST OUTCOME: The creation of the advisory council helped to guide the project through year 2 and applying for CARE Level II award.
GOAL 4: Document existing toxic exposures			
ComNET sm Surveys	<ul style="list-style-type: none"> • 5 ComNETsm surveys conducted 	<ul style="list-style-type: none"> • ComNETsm & ComNETsm connections (online database) 	GREATEST OUTCOME: ComNET sm served as a great monitoring tool for observing change over time in manner that was easy for community members to use and understand;
Transportation related air pollution	<ul style="list-style-type: none"> • Breathing Room study conducted by youth and UW studio(report attached); • UW PhD Candidate Alon Bassock conducted black carbon monitoring of ID, also included in Breathing Room study 	<ul style="list-style-type: none"> • Transportation counts; • Tools available through UW for carbon monitoring 	GREATEST OUTCOME: Breathing Room study has been key in helping other community members to understand the impact of new developments and transportation ways;
Other	<ul style="list-style-type: none"> • Brownfields analysis completed Seattle/King County Public Health 	<ul style="list-style-type: none"> • Brownfields used multiple tools for historical analysis; 	GREATEST OUTCOME: Brownfields study useful in land-use discussions for future developments planned for neighborhood (currently a hot topic)
Develop Summary	<ul style="list-style-type: none"> • Year 1 report (attached) • This report serves as summary for entire project • Summary chart prepared for community (attached) 	<ul style="list-style-type: none"> • EPA final report outline 	GREATEST OUTCOME: This summary helps to see what we've accomplished!
Community Meetings	<ul style="list-style-type: none"> • Summary chart discussed at 11/28/07 community meeting 	<ul style="list-style-type: none"> • N/A 	GREATEST OUTCOME: Summary chart

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Overall, the ID CARE Project achieved all of its goals. Perhaps the greatest indication of the effectiveness of our work can be gleaned from the following quote from one of our youth leaders who participated in this project:

"There, there's some issues that you should, that you don't realize that you should care about, like there's those things that you hear all the time like pollution, litter, that before WILD I never really thought of it, cause its always preached to you, and then you go around and you come here and you realize that, wow its really destroying the community. You see a piece of trash on the ground and you pick it up, its no big deal. Consciousness... Consciousness just like in the way, in the community of like individual people."

Section III: Reflection

It seems like hardly two years ago that we began the ID CARE Project with our kick-off training in Denver, CO with just a handful of organizations. Many of us didn't know what to expect or how to even implement such a daunting project in our communities that are challenged by so many issues.

In reflecting on the impact that the CARE cooperative agreement has had on the International District community, it is apparent that it helped us to:

- 1) gain a deeper understanding of the environmental justice issues we face, including taking a much closer look at issues we never discussed before such as air quality;
- 2) Brought to the forefront environmental issues and helped our community to understand how intertwined many of our issues are (eg – public safety and environmental toxics);
- 3) Build a stronger base of leadership of community members who understand the issues and can help to serve as educators and 'cultural navigators';
- 4) Increased IDHA's ability (and the community's ability) to connect to new partners who were able to bring new resources;

Were it not for the CARE project, these efforts would have taken much longer. It never ceases to amaze me how willing partners are to come to the table and share their resources, knowing that the relationship will be reciprocal.

Perhaps our most crucial moment was the one in which we decided to apply for our CARE Level II grant. Our community balked and resisted to applying initially, as they felt that other community issues such as access to resources and public safety were of greater concern. This moment happened to coincide with a critical point in IDHA's organizational restructuring, causing our agency to also reflect on our ability to successfully complete a competitive application. Were it not for the leadership of our advisory committee, and the assistance of our program monitor Sally Hanft, the ID CARE Project would have floundered.

It is moments like these that I realize the importance of the EPA's investment in community based organizations for implementing community-driven toxics reduction strategies. Many CBOs who do such work struggle with similar issues of capacity and sustainability. Support from the EPA to implement such work is critical their long-term organizational health, and the health of the community.

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With 20/20 hindsight, it becomes evident that we should have created an advisory committee from the get-go to help shape the project, and allocated a greater deal of initial funding to partnering CBOs who were already doing the work, but needed more significant sources of support to participate in a meaningful way. Our collaborative has taken such feedback into account and is creating a stronger design for Level II.

Another area of work we hope to expand on in Level II is engaging with other CARE communities. Other communities have successful models, from which we hope to learn and adapt to our efforts. At the National CARE training in Atlanta, GA, IDHA made contact with several other communities (such as WEACTION in Harlem, NY and the West Oakland Environmental Indicators project) and will be following up with site visits. In our Level I work, IDHA connected with only a handful of other CARE communities in Year 2 of our grant. This proved fruitful, but again, was limited because of issues of capacity.

As we embark upon our Level II project, IDHA will take the following lessons and work to improve on our toxics reduction efforts:

- **Media:** Local media played a key role in publicizing our efforts. However, it was not until the end of our Level I project where we truly capitalized on the willingness of local media to allow our residents to share their perspectives on environmental justice concerns. In Level II, we will work more closely with local media, and concentrate more efforts on partnering with local ethnic media in particular.
- **Technical assistance from the EPA:** Technical assistance was made widely available, thanks to the diligence of our program monitor, Sally Hanft. However, IDHA did not make use of the other types of assistance available, such as pro-bono legal assistance or even quickplace for accessing information on-line. With the hiring of a project manager for CARE Level II, IDHA will have greater capacity to be able to learn about these tools and how to implement them in our work.

IV. What Next?

As stated earlier, IDHA is excited to be able to continue our work through the 2007 CARE Level II award. Our various partners have agreed to continue their participation in our work, though IDHA is revamping the advisory committee's roles and responsibilities and is shaping a clearer sense of organization for partners.

In addition to CARE Level II funds, IDHA is aggressively pursuing other sources of financial support from local funders who are interested in our environmental toxics reduction work. Specifically, we have approached the Department of Ecology and the Russell Family Foundation. We are developing new partnerships with other organizations who are currently working on the City of Seattle's newest Climate Change Initiative, which will also help to leverage additional resources. With this newest initiative to address global climate change, we anticipate that a greater deal of funding will go to support local efforts to promote individual and community-wide action.

V. Feedback and Follow up

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In summary, IDHA is very excited to have been a recipient of the CARE Level I grant, and is equally as thrilled to be a new grantee for the 2007 CARE Level II grant. Our areas of greatest concern are around issues of the EPA's investment in community based organizations in this most recent round of funding, and the long-term sustainability of many of the project that are being implement nationwide.

In attending the National CARE training in Atlanta, GA, it became evident that many of the community that were completing their 2005 CARE Grants were struggling with issues of long term sustainability. I would recommend that as we evaluate the success and challenges of the 2005 grantees, that we examine ways in which these communities can continue to be involved in the 'CARE Family', for example, through technical assistance provision to other groups (that would hopefully provide them with a bit of compensation to continue their partnerships at a local level). Our agency would be quite willing to participate in further discussion about this, and any other evaluation efforts on the part of the EPA.

Please note that IDHA expects to have a full evaluation of our partnerships, community leadership efforts, and efficacy in environmental justice organizing to share with the EPA in Spring 2008. Data for that evaluation has been collected and is currently being analyzed. Our evaluators (PhD candidates from the University of Washington) have provided this evaluation in kind and anticipate being able to share the report in May 2008.

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A Community-Based Assessment of Transportation and Land-Use Patterns in Seattle's International District

Acknowledgements

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i. GLOSSARY OF SELECTED TERMS AND ABBREVIATIONS

BC-Black Carbon, a measurable substance as an indicator for diesel fuel

CARB-California Air Research Board

CIDBIA-Chinatown International District Business Improvement Area

CO-Carbon Monoxide

ComNet-Handheld computer system used by Sustainable Seattle to assess community assets

CPTED-Crime Prevention Through Environmental Design

EPA-Environmental Protection Agency

GIS-Geographic Information Systems

HAP-Hazardous Air Pollutants

HIA-Health Impact Assessment

ID-International District, a definition of the study area which includes Little Saigon, Chinatown, and Japantown

IDHA-International District Housing Alliance

NAAQS-National Ambient Air Quality Standards

NO₂-Nitrogen Dioxide

NO_x-Nitrogen Oxides, Nitrogen Oxides is the generic term for a group of highly reactive gases, all of which contain nitrogen and oxygen in varying amounts. Many of the nitrogen oxides are colorless and odorless. However, one common pollutant, nitrogen dioxide (NO₂) along with particles in the air can often be seen as a reddish-brown layer over many urban areas. Nitrogen oxides form when fuel is burned at high temperatures, as in a combustion process. The primary manmade sources of NO_x are motor vehicles, electric utilities, and other industrial, commercial, and residential sources that burn fuels. NO_x can also be formed naturally.

PM-Particulate Matter, EPA Criteria Pollutant

PPM-Parts Per Million, A unit of measure of the amount of dissolved solids in a solution in terms of a ratio between the number of parts of solids to a million parts of total volume.

µg/m³-Micrograms per Cubic Meter of Air

UW-University of Washington

VOC-Volatile Organic Compounds, Volatile organic compounds are emitted as gases from certain solids or liquids. VOCs include a variety of chemicals, some of which may have short- and long-term adverse health effects.

VPD-Vehicles Per Day

WILD-Wilderness Inner-City Leadership Development Program

1. INTRODUCTION

The Chinatown/International District and Little Saigon neighborhoods of Seattle, Washington are the cultural center for Seattle's Asian population. This area, referred to collectively as the International District (ID), has historic significance as one of Seattle's oldest communities, located in the heart of the city. The ID is a multi-model hub for local and regional transportation. As such, high volumes of traffic have significantly affected the air quality in the ID.

The ID was chosen as the focus of this study because it was identified as an environmental justice community, in that it has low-income, minority residents who are disproportionately affected by environmental pollutants. The purpose of this report was to identify local sources of air pollution, locate land uses within proximity to air pollution sources, and recommend strategies for reducing ID residents' exposure to airborne pollutants. It is unclear how the densification and increased building heights under proposed new Livable South Downtown zoning will affect air quality in the ID. Residents must be proactive in working with the city and developers to ensure that air quality issues are considered in the design and permitting of new buildings and streetscape projects. The phases of this study included

- *Public Education*—attending street fair and environmental justice conference to educate elders on air quality issues in the ID
- *Data Collection*—surveying traffic volumes in the ID, ground-proofing city land use data, locating community assets and deficits
- *Data Analysis*—identifying major pollution zones and potential sensitive land use parcels
- *Drafting Recommendations*—development of an “urban greening” strategy for the ID

This document is the final product of a collaborative research effort between undergraduate, graduate, and doctoral students from the Department of Urban Design and Planning (UDP) at the University of Washington, along with the International District Housing Alliance (IDHA) and youth interns through Wilderness Inner-City Leadership Development Project (Project WILD). The products of this research study will be useful to the entire International District community, as well as to any urban community facing public health challenges caused by poor air quality.

2. BACKGROUND INFORMATION

2.1 Demographics

The two census tracts which cover the majority of Seattle’s Little Saigon and Chinatown/International District (ID) are tracts 90 and 91 (see Figure 1). Tract 90, however, includes additional area to the west of the community-identified ID boundaries.¹ The community identified boundaries include all of tract 91 and the southwestern portion of tract 90, west of Rainier Ave S. According to the 2000 Census, the total population of tract 90 and 91 are 2,134 and 2,083 people, respectively, for a total of 4,217.

For various reasons, the official census data may not actually reflect the demographic situation in the ID.

For example, a high percentage of ID residents speak languages other than English. If census takers do not speak the language of the residents, this may make residents hesitant to accept questions of offer information to a stranger. Additionally, for many residents the only option for permanent affordable housing is in one of the many single room occupancy hotels. These residents may not be included in the population count, or may not be classified as households. It is estimated that the actual population of the ID is, therefore, higher than the census indicates.

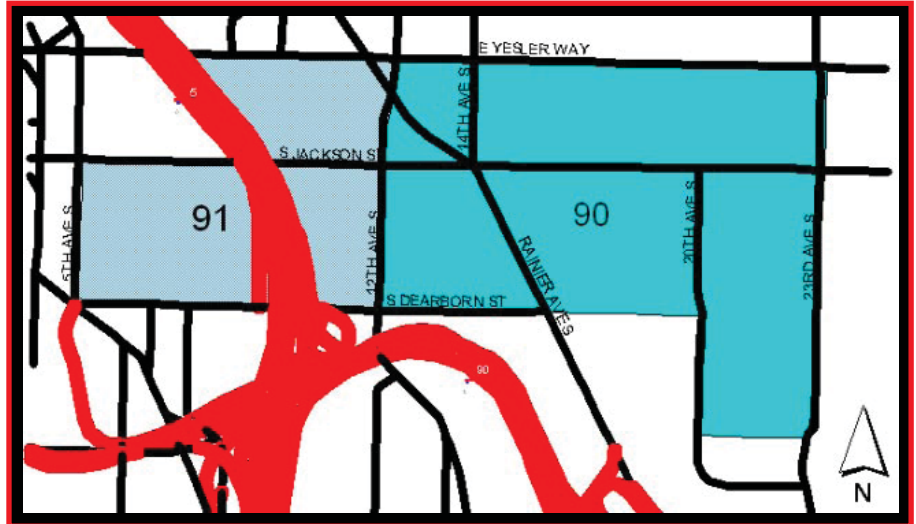


Figure 1: Location of Tracts 90 & 91 in Seattle

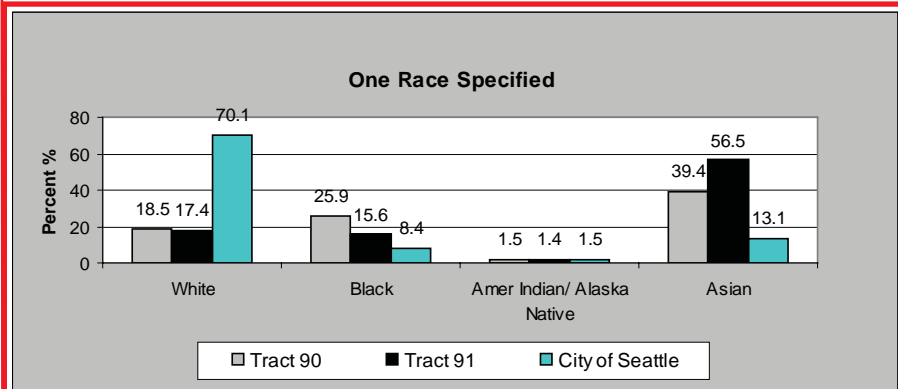


Figure 2: Race of ID Residents

Among those residents who identified themselves as being one race, the largest racial group was ‘Asian’ (see Figure 2). The pie charts below show the percent distribution of national origin. It is clear by these charts that national origin among Asians is more diverse in tract 90, which comprises Little Saigon, while Asians of Chinese origin dominate tract 91.

¹ Since many census figures were only available at the tract level and not at the block group level, this demographic analysis includes the community east of the ID, which has a different demographic composition. Therefore, this analysis will be imperfect in representing the ID population. All demographic data is from Census 2000.

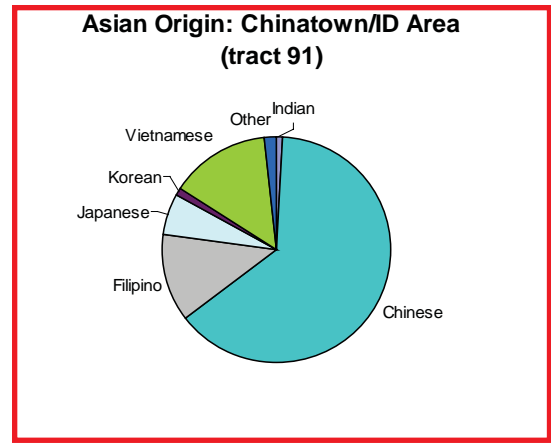
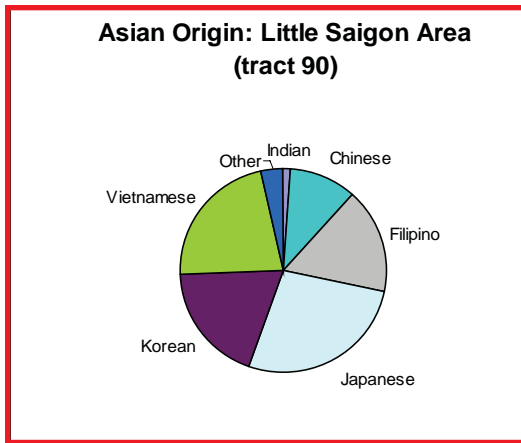


Figure 3: National Origin of Asian Residents in the International District

Income

In 2000, the household median income for Seattle residents was \$45,736. In the ID, however, median household income is far lower, only \$13,057.² Half of the population lives below the poverty level. Figure 4 shows the distribution of income groups in the two ID census tracts. Overall, incomes were concentrated at lower levels in tract 91, while tract 90 showed a wider distribution of income groups.

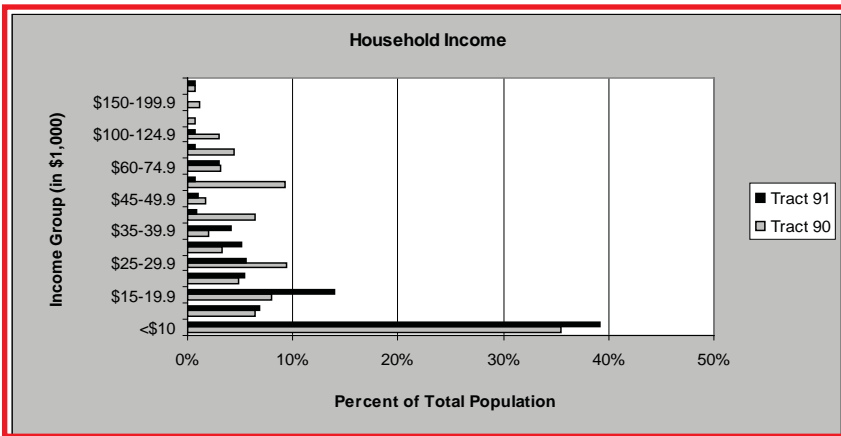


Figure 4: Income Distribution

One explanation for the wider distribution of income groups in tract 90 could be the inclusion of single-family neighborhoods east of Rainier Ave S (there are almost no single-family homes in tract 91). With raising home prices, those who can afford to buy homes in this area have higher incomes than the surrounding community. Tract 90 is also the home of Yesler Terrace. Yesler Terrace is a 22 acre Seattle Housing Authority subsidized housing project, with approximately 1,170 residents living in two-story row houses.

Educational Attainment

Educational attainment, or the highest level of school completed by an individual, is measured according to age and gender. Seattle has a higher attainment rate than the rest of the country, with 89% of adults 25 years and older having a high school diploma, and 47.2% of adults having a Bachelor’s degree or higher (compared to national levels of 87.1% and 27.8%, respectively). However, education levels in the International District are quite lower (see Table 1: Educational Attainment Comparison below).

² Based on 2000 census information for the International District in supplied by the International District Housing Alliance

	ID Women	ID Men	Seattle	Nation
High School Diploma or higher	56.10%	64.20%	89%	87.10%
Bachelor’s Degree or higher	13.30%	16.60%	47.20%	27.80%

Table 1: Educational Attainment Comparison

Though few adults in the ID have finished a bachelor’s degree, the census indicates that 41% of men and 34% of women have completed some college without receiving a degree. The overall lowest attainment rate was found among both males and females 65 years and older. Nearly 33% of males in the oldest age group had less than a 9th grade education, along with 49% of women in this group.

Age

The average age in the city of Seattle is 35.4 years. In Figure 5 the distribution of ages is shown for the two ID census tracts, compared to the city-wide distribution. The trend line for both tracts has peaks in two age groups. For Tract 90, the first peak is among those ages 25-34, and a second peak at 75-84 years. In tract 91 the first peak is among 45-54 year olds, and the second peak is with 65-74 year olds.

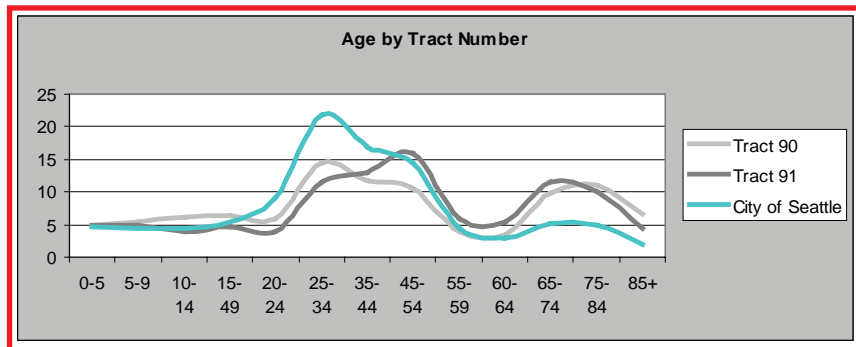


Figure 5: Age Distribution

From these trends it appears that in tract 90 there is a gap between the groups of young and old residents, while in tract 91, there is a larger middle-aged population, as well as an aging baby boomer population. Overall, about 26% of the ID residents are over the age of 65, compared to an average of 12% in the rest of the city.

2.2 Past and Current Planning Activities

Due to its strategic location near downtown, sweeping views of the mountains and Puget Sound, and easy access to major transportation routes, the ID has been the focus of recent real estate interest, especially in light of the new Livable South Downtown zoning. The new zoning will generally increase building heights and encourage more residential development throughout the International District/Chinatown and Little Saigon. The new Livable South Downtown recommended policies take into account past planning efforts in the ID in an attempt to blend the City’s goals for the area with the community’s desires.

Below is a summary of current planning documents for the ID.³

City of Seattle Comprehensive Plan (1994, updated 2004)

- Development capacity exists for 4,150 dwelling units
- Job Capacity growth of 7,300 jobs
- Targeted to add 1,000 dwelling units and 2,000 jobs by 2024.
- Adopts strategies developed through the Neighborhood Planning Process

³ Adapted from *Livable South Downtown Background Report, January 2006*

Chinatown/International District Neighborhood Plan (1998)

- First community-driven planning document focusing on four priority areas:
 - *Housing Diversity and Affordability*—including rehabilitation of older buildings
 - *Safe and Dynamic Public Spaces*—including utilizing vacant parcels and applying principles of CPTED (crime prevention through environmental design)
 - *Accessibility*—improving circulation and ease of travel not only for cars and trucks, but for transit, bikes, and walking, too
 - *Cultural and Economic Vitality*—including small business assistance and places for recreation

International District Urban Design Streetscape & Open Space Master Plan (2004)

The planning process was led by Inter*Im Community Development Association with high levels of community input. The plan includes the following areas of emphasis:

- *Open Space Emphasis*—increase parks and open spaces, especially in conjuncture with new developments
 - Increase programming at Hing Hay Park, Danny Woo Gardens, and children’s playgrounds
 - Create a new park in Little Saigon
- *Streetscape Emphasis*—make pedestrian travel safer and more pleasant, especially along busy streets and in Little Saigon, by adding amenities such as public art, street trees, hanging flower baskets, neighborhood-identifying signs, and benches. Some specific recommendations include:
 - Create a town square at the intersection of S King and Maynard St.
 - Make Main St. and Weller St. park-like “green streets”
 - Extend the “green street” treatment of Maynard to connect the Danny Woo Gardens to Hing Hay Park
- *Dearborn St. Industrial Area*—if zoning in this area is changed to allow multi-family residential, the pedestrian environment will need substantial improvements

Livable South Downtown Phase I Staff Report (March 2006)

The most recent report outlining the recommended land use activities under the new Livable South Downtown Plan. Below are some of the recommended activities:

- *Japantown Hill*
 - Increase height limits up to 240’
 - Focus on improving streets for pedestrian activity, including making Main St. a “green street” that incorporate more vegetation and sidewalk improvements to enhance the pedestrian environment
- *Chinatown/International District*
 - Retain existing height limits of 75/85’ north of Weller St.
 - Increase zoning to 125’ south of Weller St.
 - Encourage new housing development south of Weller St. or other non-residential uses at lower heights
 - Encourage mixed-use and street-oriented buildings and improve the pedestrian environment
- *Little Saigon*
 - Increase residential density
 - Rezone Jackson St. to encourage mixed-use development, retain current height limit of 65’ long Jackson St., thus keeping new buildings in scale with existing buildings
 - Allow denser and higher buildings along Dearborn, particularly at the Goodwill Site
 - Support visual references to Asian culture
 - Improve the pedestrian environment through urban design treatments such as sidewalk improvements, public art, and benches

2.3 Current Land Uses

Chinatown/International District and Little Saigon are both destinations for visitors and workers, as well as places of residence and community gatherings. The blocks include a diversity of land uses and several mixed-use structures. The two most predominant land uses in this community are parking and retail. Other uses, including industrial, mixed-use, multi-family, office, and terminals and warehouses, have a relatively even distribution in terms of absolute numbers.

Also included among these land uses are places such as elderly residences, schools and gathering spaces, where children and elderly spend significant amounts of time. Both children and the elderly are more sensitive to the negative health affects of poor quality than healthy adults. *Sensitive land uses* are places near heavily polluting roads and freeways where vulnerable populations spend significant amounts of time. Two examples of sensitive land uses in the ID include:

- Nikkei Manor, retirement facility located at S Dearborn St and Ave S
- A group home on S Weller St and Ave S.

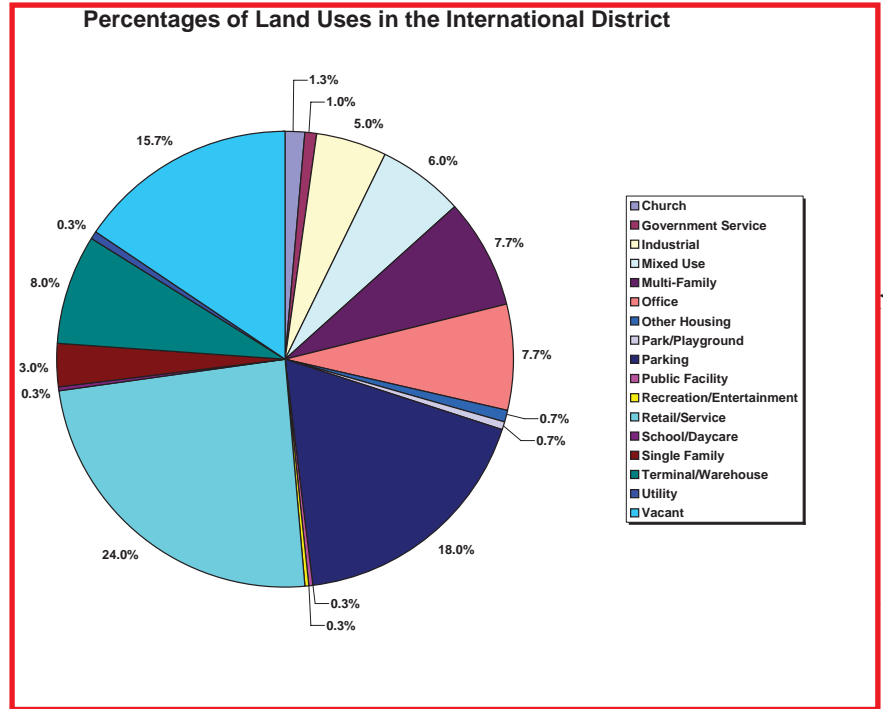


Figure 6: Land Uses in the ID

Residential Land Uses

All residences, schools, and hospital facilities are *potentially sensitive land uses*. They only become sensitive land uses if a polluting sources are nearby. The entire housing stock of the ID includes potentially sensitive land uses. Luckily, the majority are located in the interior of the District, on low-traffic roads. The existing housing of the ID is unique from other Seattle neighborhoods because it is composed almost entirely of multi-family housing with very few single family homes. Housing in the core of the ID, in Chinatown and Japantown, includes multi-family apartments, single room occupancy hotels, and condos, including units in mixed-use buildings. The few single family homes are located in Little Saigon.

An important source of affordable housing, which is easily overlooked, is the single room occupancy hotels in the ID. Hotels such as the Panama Hotel and the Northern Pacific (N.P.) Hotel were constructed beginning in the 1860s to serve the Chinese and other Asian immigrants coming to work in the region.⁴ Many of the parcels zoned for retail or services are actually historic hotels in which elderly residents continue to rent single rooms.⁵

Parks and Open Space

4 (CIDBIA). Chinatown International District Business Improvement Area. (2001) Then and Now.

<http://www.internationaldistrict.org/history.asp> (Retrieved July 17, 2006)

5 Inter Im (2006). Affordable Housing Projects. <http://www.interimicda.org/AffHouProjs.htm> Retrieved August 13, 2006

There are relatively few public open spaces serving this community. Hing Hey Park, located on S King St and Maynard Ave S, is a paved park in the heart of the ID. This park is easily accessible and is protected from major transportation corridors. The Danny Woo Community Garden at 620 S Main St is the main green space available to residents and visitors. This patch garden is used by low-income elderly living in the neighborhood. Gardening gives these elders the opportunity to maintain necessary cultural ties to the land.⁶ The garden is located on the edge of the ID, elevated on an incline above the rest of the neighborhood, which makes it less accessible than Hing Hey Park. Additionally, the Danny Woo Community Garden is located directly adjacent to I-5, which puts its visitors close by this major air pollution source.

Schools, Churches, and Markets

There is one tax parcel owned by a public school in the ID, the Chong Wa Educational Society, which is located on S Weller St and 7th Ave S. There may be other private schools in the ID that are renting or leasing their property from another owner.

Churches and markets are other gathering spaces where people spend time and could be vulnerable to air pollution. There are several churches that own property in the ID, including the Nichirin Buddhist Church, the Southern Baptist Church and the Seattle Goodwill Industries. Most of the churches are located in Little Saigon.



NP Hotel

Uwajimaya Village at S Lane St. and 6th Ave. S is the largest supermarket in the neighborhood and attracts shoppers from around the region seeking Asian groceries and specialty goods.⁷ In addition to Uwajimaya, several smaller markets selling Asian groceries are scattered throughout Little Saigon and Chinatown. Many of these markets are located along busy streets. For example, there is a market

located on S Jackson St., almost directly under I-5 in Little Saigon. A shopper spending time outside browsing the produce might be susceptible to breathing polluted freeway air.



Entrance to Danny Woo Garden

Parking and Industrial

Parking is very abundant in the ID, possibly as a result of its proximity to the two sports stadiums in south downtown: Qwest Field and Safeco Field. During sporting events, parking lots fill up and traffic volume throughout the area increases. At other times, many of these parking lots sit empty or only partially full.

In Little Saigon to the east of I-5, there are more industrial land uses and warehouses than in the Chinatown/International District area. Trucks traveling to and from these industrial uses are one of the mobile sources of air pollution that our study examines.

6 Inter Im (2006). Danny Woo Community Garden. <http://www.interimicda.org/garden.htm> (Retrieved July 17, 2006)

7 Uwajimaya (2006). Uwajimaya Seattle. <http://www.uwajimaya.com/sea/> (Retrieved July 17, 2006)

2.4 Transportation History in the ID⁸

The growth of Seattle has been directly related to the ability to move people and goods around the region. The location of the International District, just south of Seattle’s Central Business District, has always been a hub for regional transportation. The modes may have changed over time, but the high percentage of transportation opportunities relative to the rest of the region have always been a part of life in the International District.

In the 1870’s, the regions’ primary transportation mode was steamship. City officials provided incentives to steamship operators to ensure that Seattle would be the primary port in the Puget Sound. It worked, and soon virtually every “mosquito fleet” operator had a dock in Seattle, helping to keep people and goods moving throughout the Puget Sound Region.



Seattle Waterfront, 1870’s, courtesy HistoryLink.

Although Northern Pacific Railroad picked Tacoma for its Puget Sound terminus in 1873, Seattle boosters built their own railroads to connect Seattle to the coalfields east of Lake Washington and to the rest of the country. These numerous small rail lines were soon consolidated by James J. Hill to become the Great Northern Railway. In 1901, Northern Pacific was purchased by Hill and in 1904, Hill began construction of a new central rail station. King Street Station, along with the International District, became the heart that pumped new blood (in the form of settlers, goods, and workers) into the burgeoning city. Five years later in 1911, Union Pacific (the competitor to Great Northern) opened up its own rail station a block away, known as Union Station.



King Street Station, 1906, courtesy MOHAI



Union Station, 1915, courtesy MOHAI

As more and more people came to Seattle, the need for reliable transportation options became apparent. During the last decade of the 19th Century, the primary urban transportation mode quickly evolved from horse drawn carriages to streetcars.

By the late 1920’s, Seattle had the same amount of mobility as any great city. Steamers connected Seattle to other Puget Sound ports, trains connected the city to the rest of the country, and streetcars allowed the original urban villages to develop and disperse the growing numbers of residents.

⁸ Historical references adapted from various HistoryLink.org online encyclopedia articles

Unfortunately, this golden era declined with the growth of automobile use. By 1932, new transportation improvement projects (with heavy support from automakers) focused entirely on rubber-tired conveyances. Highway 99 was built, causing Interurban rail service between Seattle and Tacoma to cease. Highway 99's new Aurora Bridge did not include any trolley tracks. Instead, modern "trackless trolleys" became the only ride for those without an automobile.



Seattle Streetcar, 1900, courtesy HistoryLink.org



Trackless Trolley, 1940's, courtesy HistoryLink.org

By the 1950's, it was clear that the automobile was Seattle's ride of choice. New infrastructure was needed; when the Washington Department of Transportation began planning Seattle's "Central Freeway," (I-5), some officials begged for a rail transit right-of-way, but were ignored because it would have undermined automobile interests. Regardless, the new freeway cut straight through the International District and slashed the same heart that had pumped Seattle full of life.

Still today, the ID is a transportation hub serving bus, car, bike, train, and pedestrian travelers. The International District is a vibrant, mixed-use, pedestrian-saturated community, thanks in part to the accessibility a major transportation hub provides. However, most of the transportation modes present in the International District require the consumption of petroleum-based fuels. The exhaust from these vehicles produces air pollution that may have an adverse health effect on pedestrians and bicyclists in the ID.



Construction of I-5 through the ID, 1950's, courtesy HistoryLink.org

As the Livable South Downtown planning policies are implemented in the future, the numbers of people living in proximity to mobile pollution sources is likely to increase. This area will remain a major transportation hub for Seattle, as it has always been. Citizens will need to be diligent in pursuing land-use designs that minimize exposure to mobile-source pollution. With sound planning and outreach, the heart of the Puget Sound region will soon be pumping new life into a world-class city.

2.5 Air Quality Research as a Public Health Indicator

The focus of this study is on the intersection between land use and transportation sources of pollution. The following section identifies the major traffic pollutants and summarizes recent scientific studies on the impacts transportation pollution has on air quality and public health

Table 2 lists several motor vehicle air pollutants, the National Ambient Air Quality Standards (NAAQS) for pollutants, described as *Criteria Pollutants* by the U.S. EPA, and the adverse health effects of exposure to these pollutants. An examination of environmental health and engineering research studies helps illustrate the dispersion patterns of traffic pollutants, especially from high volume freeways in urban areas.

Motor Vehicle Air Pollutants	EPA Criteria Pollutants	National Ambient Air Quality Standards-(Primary NAAQS)				Adverse Health Effects
		1 hour	8 hour	24 hour	Annual Mean	
PM2.5	PM2.5			65 ug / m3	15 ug / m3	* aggravation of asthma * depressed lung function in children
PM10	PM10			150 ug /m3	50 ug /m3	*aggravation of acute respiratory symptoms * increased risk of wheezy bronchitis in infants
Ultrafines (UFPs)	NA					
Ozone	Ozone	0.12 ppm	0.08 ppm			*aggravation of asthma *reduced lung function
CO	CO	35 ppm	9 ppm			*increased cardiac ischaemia
NO2	NO2	0.11 ppm (WHO)			.053 ppm	* increased respiratory morbidity *aggravation of asthma * reduced rate of lung function
VOC's	NA	Hazardous Air Pollutants (HAP's) e.g. benzene				* increased response to allergens *increased risk of lung cancer * increased risk of childhood leukemia

Table 2: Traffic Pollutants

Rodes and Holland found in their 1981 study of a nine-lane freeway with approximately 200,000 vehicles per day (vpd), that NO_x concentrations decreased rapidly within 20 meters and reached background levels at approximately 150 meters.⁹ Obviously, people living in close proximity of this freeway may have been at risk for exposure to NO_x. In 1993, a population exposure study was conducted in Tokyo, Japan where researchers monitored NO_x concentrations at various distances from a major road described as having 44,000 vehicles per 12 hours.¹⁰ These researchers found a similar rapid decline in NO_x within 20 meters of the road, reaching background levels at 150 meters. The researchers also correlated respiratory symptoms with distance living from the traffic source. This curvilinear pollutant dispersion pattern was also observed for NO₂ and

black smoke in a Dutch study of traffic pollutant dispersion from major roads having 72-119,000 vehicles per day.¹¹ In 2002, a study by Zhu et al. found that ultrafines, CO, and black carbon (BC) followed similar patterns of decreasing concentration with increasing distance from the freeway. These researchers concluded that any of these pollutants could be used interchangeably to estimate the concentrations of the other two pollutants (Zhu, Hinds et al. 2002).

The spatial dispersion of traffic pollutants depends on a number of factors: wind speed and direction, topography, atmospheric stability and temperature. The findings that pollutants are at significant concentrations within proximity to high traffic roads has led to a substantial body of research on the adverse health effects of traffic pollutants amongst populations who reside in these areas. Table 3 provides a chronological summary of key European studies on the adverse health effects of traffic pollutants, primarily focusing on the impacts on children who are considered a sensitive population due to their lung size and metabolic rate.

Study Area	Pollutants / Traffic	Adverse health effects
Netherlands	PM ₁₀ ; NO ₂ ; black smoke 73-136 K vpd	Children within 100 m of truck traffic had reduced lung function (Brunekreef, Janssen et al. 1997)
Netherlands	PM ₁₀ ; PM _{2.5} ; black smoke; benzene 80-150 K vpd	Pronounced respiratory symptoms amongst children living within 100 m of freeway (Roorda-Knape, Janssen et al. 1998)
Germany	NO ₂ / 50 K vpd	Outdoor concentrations of NO ₂ associated with allergic symptoms(Kramer, Koch et al. 2000)
UK	10-100 K vpd	High incidence of wheeze amongst children living within 90 m of busy road (Venn, Lewis et al. 2001)
Netherlands	PM _{2.5} ; NO ₂ ; benzene; EC 30 – 155 K vpd	Respiratory symptoms in children with allergies exasperated by proximity to busy roads (Janssen, Brunekreef et al. 2003)
Germany	Benzene, soot, NO ₂ 148 K vpd	High traffic density in 50 m buffer associated with asthma and cough (Nicolai, Carr et al. 2003)

Table 3: European Traffic Proximity Studies -- Adverse Health Impact on Children

⁹ Rodes, C. and D. Holland (1981). "Variations of NO, NO2 and O3 Concentrations Downwind of a Los Angeles Freeway." *Atmos. Environment* **15**: 243-250.

¹⁰ Nitta, H., S. T., et al. (1993). "Respiratory health associated with exposure to automobile exhaust. Results of cross-sectional studies in 1979, 1982, and 1983." *Arch Environmental Health* **48**: 53-58.

¹¹ Roorda-Knape, M., N. Janseen, et al. (1998). "Air Pollution From Traffic in City Districts Near Major Motorways." *Atmos. Environment* **32**(11): 1921-1930.

Study Area	Subjects	Pollutant / Traffic	Results
San Diego County, CA	Children under 14; n=7053 cases; n=3092 controls Low income	Traffic emissions Traffic count within 550 ft buffer around residence;	Proximity to high traffic flows related to an increase in repeated medical visits for asthma (English, Neutra et al. 1999)
East Los Angeles	4 elementary schools Low-income 90 % Hispanic	PM10 3 within 150m ~250,000 vpd	Lower than regulatory levels but could still result in adverse health effects. (Korenstein and Piazza 2002)
California	Block group analysis; Income; race	Traffic density within buffered census block group	Low-income and minority children 3x more likely to live in high traffic areas than white children. (Gunier, Hertz et al. 2003)
East Los Angeles	Panel study Asthmatic children N=22 Low income, Hispanic	VOC's, PM10 EC High traffic area	Air toxics in the pollutant mix from traffic and area sources; may exacerbate asthmatic symptoms in children (Delfino, Gong et al. 2003)
California	Schools Income & Race	High volume > 50,000 Med volume 25,000-49,999	Higher percentage of minority and low income schools located near high traffic roads (Green 2004)

Table 4: U.S. Traffic Proximity Studies

Similar research studies were conducted in the U.S. (notably California), where researchers also investigated the potential disproportionate impact of traffic pollution on minority and low income children, Table 4.

Most traffic proximity studies have examined the non-cancer adverse health effects from exposure to criteria pollutants released from motor vehicles, however, there is increasing concern on the carcinogenicity of air toxics released from diesel emissions or as a component of ultrafine particles. In 2004, an Italian study examined the hypothesis that proximity to heavy traffic is associated with childhood leukemia (Crosignani 2004). Their results suggest that living near busy roads (within 150 meters) is associated with increased risk of childhood leukemia. Disturbingly, a recent Puget Sound Clean Air Agency report concluded that mobile sources are likely to account for

approximately 85% to 95% of the potential cancer risks among outdoor air toxics.¹²

Furthermore, there is reason to believe the potential risk is underestimated. One reason for this is that the selected monitor locations for this study were expected to reflect general urban settings and not the microscale environment near limited-access freeways (the International District is an example of a microscale environment).

Given the body of scientific evidence with respect to non-cancer risk and the emerging research on potential cancer risk associated with proximity to high traffic sources, then one might anticipate an increased awareness amongst urban planners on siting incompatible land uses along the corridor of limited access freeways. Our findings suggest this is not the case, at least within the Puget Sound area, where the approach to clean air emphasizes pedestrianization, but not microscale air monitoring and prudent land use management within proximity to high traffic sources such as urban freeways.

Nevertheless, other strategies are emerging. A recent air quality and land use guidance document issued by the California Air Resources Board (CARB) recommends avoiding siting new sensitive land uses within 500 (150 meters) feet of an urban freeway.¹³ This guidance aligns with California Senate Bill 352 that prohibits locating schools near urban freeways without an adequate environmental impact assessment. The CARB report describes *sensitive land uses* as “land uses where sensitive individuals [children, the elderly and those with pre-existing serious health problems affected by air quality] are most likely to spend time [which] include schools and schoolyards, parks and playgrounds, daycare centers, nursing homes, hospitals and residential communities”.¹⁴ Yet, even the CARB guidance document is silent about existing land uses.

¹² Puget Sound Clean Air Agency (2003). Final Report: Puget Sound Air Toxics Evaluation. Seattle.

¹³ California Air Resources Board (2005). Air Quality and Land Use Handbook: A Community Health Perspective.

¹⁴ *ibid*

Perhaps a recent court settlement agreement may bring salient an understanding of local air quality impacts from traffic sources.¹⁵ As background, the Sierra Club had filed suit regarding the initial Environmental Impact Statement for a 4-lane expansion of US 95 in Las Vegas, Nevada, claiming that it did not sufficiently address local air quality impacts on local residents. In return for Sierra Club withdrawing its challenge to the US 95 project, the Nevada Department of Transportation and the Federal Highway Administration will conduct air quality monitoring at three elementary schools that, as a result of the expansion project, will find themselves within 100 meters of a freeway with a volume of 300,000 vehicles per day. In addition, the settlement agreement requires the selection of five major highways across the country where local air quality monitoring will be conducted to determine the level and behavior of diesel particulates and diesel organic gases. The Las Vegas case points out the complexity of responsibilities for local air quality impacts from heavy traffic sources; however, to understand the relationship between transportation systems and land use patterns, local communities can conduct a preliminary health impact assessment (HIA).

2.6 Health Impact Assessment

A Health Impact Assessment (HIA) is an analytic process to measure the potential effects a proposed policy or program may have on the health of a population. The results of an HIA are often reported to local authorities and used as a basis on which to develop mitigating measures for public health concerns.

It has been stated that the concept of *health* in the HIA is broader than merely the absence of disease, infirmity, or injury and encompasses all aspects of physical, mental and social health.¹⁶ To this end, the design of the livable city should promote pedestrian high-density and healthy living where land use decisions with possible adverse health impacts on vulnerable populations are avoided or mitigated.

The World Health Organization also describes the Health Impact Assessment as based on the values of:¹⁷

- 1) *Democracy* – allowing people to participate in the development and implementation of policies, programs or projects that may impact their lives;
- 2) *Equity* – assessing the impact of a proposal on the population with emphasis on those most vulnerable;
- 3) *Sustainability* –the short and long term impacts and
- 4) The ethical use of evidence utilizing the best available methods

Thus the following community-based evaluation of transportation systems and land use patterns in the International District could be considered the first stage of a health impact assessment, which will raise general awareness and encourage participation in order to influence the pursuit of more quantitative air quality assessments or the determination of land uses near transportation sources of pollution.

15 U.S. District Court, N. (2004). *Sierra Club v U.S.DOT, U.S. FHWA, Settlement Agreement*.

16 Joffe, M., , and J. Mindell (2005). "Health Impact Assessment." *Occup. Environ. Med* **62**: 907-912.

17 World Health Organization (2005). Why Use HIA? <http://www.who.int/hia/about/why/en/print.html>.

3. METHODS AND DATA SOURCES

In order to collect the necessary data on pollution sources and sensitive land uses, and also spread community awareness of air quality issues, the UW research team and the WILD youth used several creative methods of data collection and public education. Throughout the ten week study period, the research team and youth participated in the International District Summer Street Festival, the B.E. Healthy Conference on Environmental Justice, a collaborative data collection effort with community elders, and several other community-based data collection activities.

3.1 Street Festival

On the weekend of July 8th and 9th, 2006, members of the University of Washington research team joined the IDHA staff and WILD youth at the “Eco-Village,” an interactive educational area at the International District Summer Festival. The University of Washington participated with several other public organizations to demonstrate and bring awareness about environmental issues concerning the home and outdoors.

The UW booth featured a land use map of the ID highlighting the major transportation and freight corridors. The purpose of our model was to create an educational tool that would simplify and demystify the relationship between air pollution sources and sensitive land uses. Our model included a large base map indicating the locations of the various land uses in the ID in relation to the major transportation corridors. A large base map made using ArcGIS was printed and mounted onto a board. To represent the major transportation corridors, plastic cars, trucks, buses and a train were glued to the board along the roads, freeways, and train station to demonstrate the various mobile sources and locations of pollution sources.



Fun at the ID Street Festival

The WILD youth were trained on how to present the information included in the model. At the festival, the youth explained the model to the public, often translating into Chinese or Vietnamese. Most of the guests at the festival did not speak English, so the ability of the youth to translate this message to the community was very important.



A ComNet Handheld Computer

3.2 ComNet Surveys

On July 19th, 2006, the UW research team participated in street-level survey for Sustainable Seattle with the WILD youth and some elders of the ID community. Engaging the youth and elders in this activity created awareness within the community of the condition of their physical surroundings. The purpose of the surveys was to document the state of the neighborhood in terms of assets and deficits. Assets were positive aspects such as public art, while a deficit was a negative aspect such as a trip hazard on a sidewalk.

On the day of the survey, all participants gathered at the IDHA office to be trained on the data collecting process. Teams were formed that each had at least one WILD youth, two community elders, and one member of the UW research team. Each group was assigned a street and would be responsible for identifying either assets or deficits on that street. Each group was given a list of assets or deficits, a ComNet handheld computer, and a digital

camera. Every person in the group would be an observer, watching for assets or deficits that caught their eye and were on the list that was handed out. The youth used the handheld computers to record the data, and one person double-checked the computer to make sure the data had been inputted correctly.

The results of this survey contributed to a city-wide quality of life indicators project through Sustainable Seattle. The results also helped gather important information about the outdoor air quality and sensitive land uses. For example, surveyors noted the number and location of benches in the ID, a place where elders could potentially spend time in proximity to high-levels of air pollution. Surveyors also noted idling cars and trucks, which represent unnecessary sources of air pollution.

3.3 Land Use Data Survey

On Monday July 24th, 2006, the UW research team met with IDHA's WILD group to ground-proof the official land uses data provided by the City for the ID. City data sources indicated the zoning of each parcel and the present use, but from our initial examination of the neighborhood it appeared that, in some cases, the registered present uses were outdated. In order to accurately locate the sensitive land uses in the ID, it was necessary to have an accurate map of land uses.

The UW team created a series of maps showing blocks in the ID and the listed present use. The WILD youth and UW researchers broke up into groups to survey the neighborhood. Each group was assigned two streets along which to verify the land uses. Any discrepancies between the listed land use and the actual use were recorded on the given maps. For example, in Little Saigon there are several of grocery stores (would be listed as "retail") that are located in buildings that are listed as 'industrial'. Additionally, several parcels that are listed as 'mixed-use' include residential units.

An additional part of this survey was locating and counting all formal and informal outdoor seating areas, including bus stops, park benches, and outdoor restaurant seating. This data will help to further identify places where people spend time outdoors and are could be susceptible to air pollution intake.

3.4 B.E. Healthy Conference

The International District Housing Alliance sponsored its first B.E. (Built Environment) Healthy Conference on Friday, August 11th, 2006. Mayor Grey Nickels was an invited guest speaker and afterwards the conference participants attended specific workshops on environmental topics such as indoor air quality, solid waste, food safety, and outdoor air quality. The UW Research Team sponsored the outdoor air quality workshop in which the WILD youth were not only translators but also presenters of the land use and transportation data collected during the summer. Through interactive games and discussion, the workshop attendees learned about preferred walking routes, high traffic areas to avoid, and ideas about designing an urban oasis within the ID.



Some of the UW Research Teammates take a break at the B.E. Healthy Conference to pose for a photo

4. DATA

4.1 Transportation Sources & Volumes

Freeways

The International District is uniquely situated at the intersection of two major freeways, Interstates 5 and 90 (see Figure 7). While I-90 terminates near the neighborhood and has traffic volumes of roughly 18,000 vehicles per day at the on and off ramps,¹⁸ I-5, the major North-South corridor for the region, carries an average annual daily traffic volume of about 300,000 vehicles per day. Of these vehicles, roughly eight percent (25,000) are heavy duty trucks.¹⁹ Directly to the west of the neighborhood is State Route 99, which includes the Alaskan Way Viaduct. This highway carries an annual daily traffic volume of 103,000 vehicles per day, one fourth of the city's North-South traffic.²⁰ All three of these thoroughfares are used for freight movement to and from the Port of Seattle along the waterfront, which handles roughly 1.3 million containers annually with slightly over 5,000 heavy-duty trucks visiting the Port each weekday.²¹

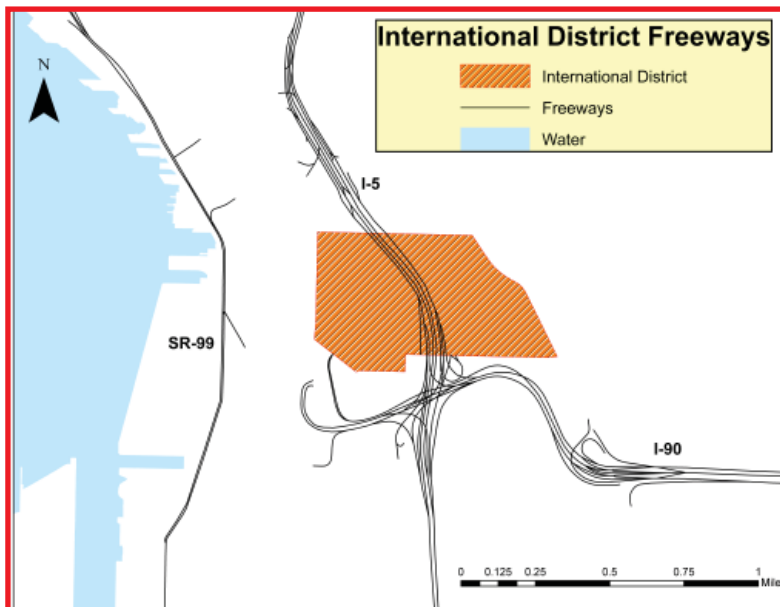
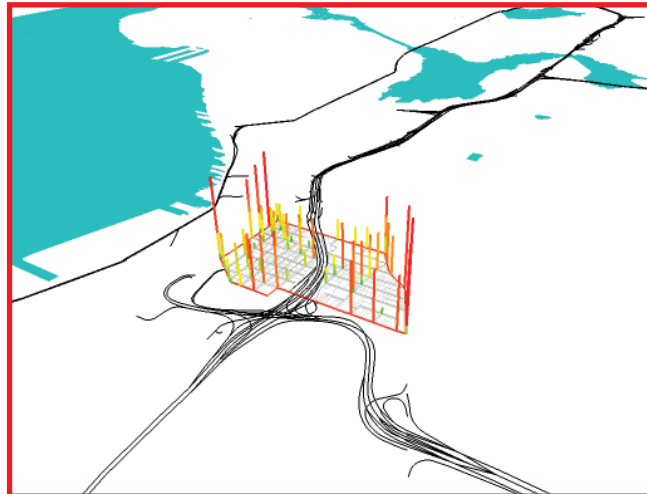


Figure 7: Regional Freeway Network and the ID



Cars

While traffic on the surrounding freeways bypasses the neighborhood, arterial and collector streets have heavy city traffic volumes. Along all of the major corridors in the neighborhood (4th Ave. S, 5th Ave. S, S Jackson St., S Dearborn St., Boren Ave. S and Yesler Ave. S) average weekday traffic exceeds 10,000 vehicles per day.²² During an afternoon with a Mariner's baseball game at the nearby Safeco Field, IDHA's WILD youth counted 2,500 cars at three major intersections in a half hour period (see Figure 8).

Figure 8: Car volumes at ID intersections

18 University of Washington, Intelligent Transportation Systems, Daily Traffic Count Analysis. Retrieved 8/3/2006 from <http://orion.its.washington.edu:6302/QueryDailyVolume>

19 Washington State Department of Transportation. 2005 Annual Traffic Report. Retrieved 8/3/2006 from: http://www.wsdot.wa.gov/mapsdata/tdo/PDF_and_ZIP_Files/Annual_Traffic_Report_2005.pdf

20 Washington State Department of Transportation. SR 99 – Alaskan Way Viaduct and Seawall Replacement. Retrieved 8/10/2006 from: <http://www.wsdot.wa.gov/projects/Viaduct/>

21 Port of Seattle. Container Terminal Access Study, Year 2003 Update. Executive Summary. Retrieved 8/12/2006 from: http://www.pscleanair.org/specprog/globclim/cpsp/pdf/t_exsum.pdf

22 Seattle Department of Transportation. Traffic Counts 1993 – 2005.



Figure 9: Heavy-duty double trailer truck driving through the ID on Jackson St.

Data on truck volumes is difficult to gather. Trucking firms are proprietary in nature and do not readily volunteer information on routes and travel volume. In addition, due to the method through which traffic volumes are reported, all vehicle classes are lumped into a single number per time period. This makes it impossible to decipher truck traffic from cars and buses. However, field observations along S. Jackson St. yielded an hourly afternoon average of 45 trucks while S. Dearborn St. reported close to 70.

Buses

King County Metro houses one of its bus terminals, the Ryerson Bus Base just outside of the International District at 1220 4th Ave. S. As such, 111 different routes with 3,034 bus trips pass through the neighborhood on weekdays (see Figure 11).²⁵ As shown in Table 5, the area nearest to the bus terminal has the highest volumes of buses with the intersection of 5th Ave. S and S Jackson St. carrying 1,488 stops daily. During an afternoon with a Mariner's baseball game at the nearby Safeco Field, IDHA's WILD youth counted 350 buses at three major intersections in a half hour period. During game events additional bus service is provided from park and ride lots increasing the number of buses that travel through the neighborhood. It should be noted that not all of the buses that travel through this area operate on pollution-causing diesel fuel. Many of Metro's buses run on electricity or utilize hybrid technology. Since bus coaches do not necessarily serve the same route every day and are in rotation, it is difficult to estimate the number of buses traveling on each route that rely solely on diesel or bio-diesel fuels.

23 Heffron Transportation, Inc. August 2003.

24. Seattle Department of Transportation. Transportation Strategic Plan – Adopted October 21, 2005. Retrieved 8/6/2006 from: <http://www.seattle.gov/transportation/tsphome.htm>

25. King County Metro Transit. Trip Planner. Analysis conducted using the 'find routes' tool on 8/2/2006 available at: http://tripplanner.metrokc.gov/cgi-bin/servall_page.pl?resptype=U

Trucks

Bordered by the Duwamish Industrial Area on its south and near to Port of Seattle activity (which induces 500 daily truck trips on local streets²³), the International District has several designated truck routes bordering and intersecting the neighborhood. While only S Airport Way and S Dearborn St. carry the official truck route designation, many trucks have been observed on other main arterials such as S Jackson St. and through the smaller streets of the neighborhood. According to Seattle's Transportation Strategic Plan, all arterials are places where trucks are allowed to travel and, indeed, are encouraged to do so.²⁴ As seen in Figure 9 and Figure 10 large heavy-duty double trailer trucks travel through the neighborhood, while smaller delivery vehicles are allowed to idle in the absence of no idling legislation.



Figure 10: Idling delivery truck on S. King St.

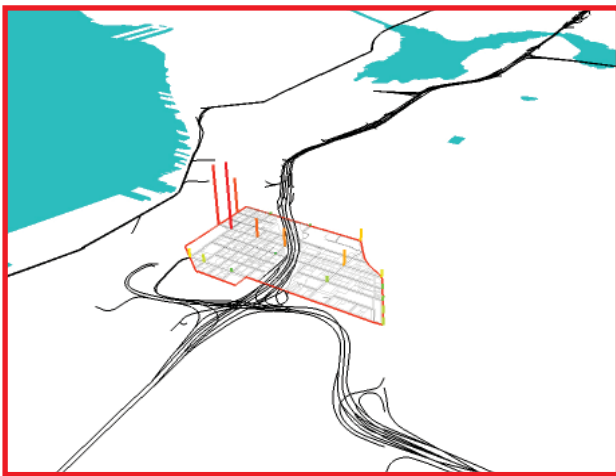


Figure 11: Bus volumes at ID intersections

Intersection	Buses
5th Ave S & S Jackson St	1488
4th Ave S & S Jackson St	1349
S Washington St & 4th Ave S	824
Maynard Ave S & S Jackson St	445
8th Ave S & S Jackson St	408
12th Ave S & S Jackson St	352
Yesler Way & Boren Ave S	284
S Dearborn St & 5th Ave S	215
Rainier Ave S & S Jackson St	172
S Dearborn St & 6th Ave S	167
S Lane St & Rainier Ave S	162
S Dearborn St & Rainier Ave S	162
S Weller St & 12th Ave S	135
S King St & Rainier Ave S	117
S Weller St & Rainier Ave S	117
S Dearborn St & 7th Ave S	94
Yesler Way & 6th Ave S	51
Yesler Way & 8th Ave S	51
S King St & 8th Ave S	37

Table 5: Bus traffic per intersection

Trains

On the neighborhood’s western border along 4th Ave. S are rail lines that service the Sounder commuter trains, Amtrak and freight haulers Burlington Northern- Santa Fe and Union Pacific. The freight haulers working in conjunction with port activity have an average of fifty trains that pass through the area daily.²⁶ The passenger rail lines, Amtrak²⁷ and Sounder²⁸ have thirteen and twelve trains, respectively, that utilize the tracks daily. Sound Transit plans to expand Sounder service in the coming years, thus adding train volumes to these tracks.

4.2 Sensitive Land Uses

Figure 12 illustrates the location of potentially sensitive land parcels with each color representing a specific functional land use. For example, yellow represents residential land uses. As mentioned above, in order to truly classify a land use as “sensitive,” a land use must be both in proximity to pollution sources and be a place where vulnerable populations such as the elderly or children live, play or attend school. Therefore, elderly housing or a school within 150 meters of Interstate 5 or located along the Dearborn truck route are both sensitive land uses.

The ground-proofing survey conducted with WILD youth, revealed that approximately 12% of land uses within the International District could potentially be classified as sensitive land uses. These are parks, schools, retirement homes, apartments, meeting places, churches or day care centers located within close proximity of urban freeways, heavy bus traffic, train stations or truck routes. The dashed area within the map is the area that will be most suitable for future high density, pedestrian living. This area is already a popular place for residents to walk and spend time, and it is located away from major polluting roads.

26 Siler, Norman. Union Pacific’s Environmental Field Operations Manager. Personal Interview 7/2006.

27 Amtrak’s official website. Retrieved 7/2006 at:

<http://www.amtrak.com/servlet/ContentServer?pagename=Amtrak/HomePage>

28 Sound Transit. Sounder Commuter Rail Schedules. Retrieved 7/2006 from:

<http://www.soundtransit.org/x71.xml>

5. RECOMMENDATIONS

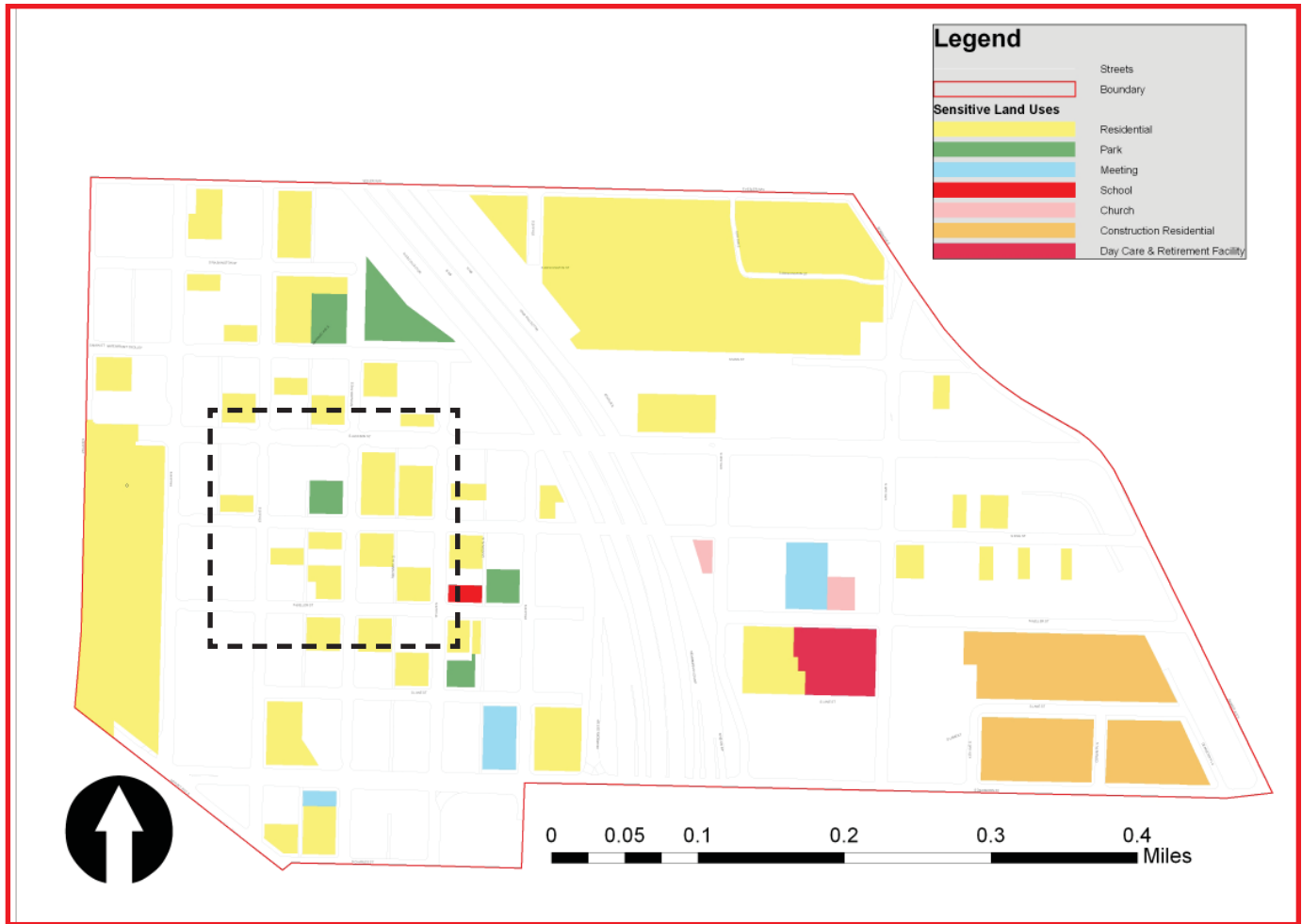


Figure 12: Potentially Sensitive Land Uses

Given the location of the Chinatown/International District and Little Saigon vis-à-vis Seattle’s Central Business District, Stadium District, Ports, and transportation corridors, the quality of life of ID residents may suffer if careful attention is not paid to maintaining a balance between encouraging commerce and maintaining livability. With a healthy economy, the commerce passing around and through the ID will continue to thrive, however, without prudent planning and consideration given to public health concerns, residents of the ID could continue to suffer high levels of illness caused by air pollution.

The following section gives general recommendations for how the IDHA can advocate for measures that will reduce ID residents’ exposure to outdoor air pollutants. These recommendations take into account the possibilities for development under the new zoning and potential places where development may occur. These recommendations also consider the new Livable South Downtown planning goals, in addition to the goals created by residents and merchants during the community planning processes in 1998 and 2004.

5.1 Recommended Activities: Built Environment

Past and current planning in the ID has focused on encouraging residential density, and generally improving the District for shopping and pedestrian activity. These plans do not consider specific public health implications of proposed land use policies. However, there are some policies which, in addition to making the ID a more

pedestrian-friendly and livable community, also can contribute to reducing residents' exposure to air pollution. In order to achieve maximum public health benefits from the implementation of these planning goals, it will be important for the community (including IDHA) to take an active role in advising the City. The following are recommended strategies IDHA can take to advocate for cleaner air in the ID.

Urban Greening

Increasing open space, adding street trees and other “greening” goals of the Urban Design plan could be implemented in such a way as to create a clean air “urban oasis” within the heart of the ID.



Before & After photos depicting King Street, leading from Hing Hay Park to the International District Tunnel Station. Trees have been added to the streets and rooftops, helping to create an “air oasis” amidst the high levels of mobile-source pollution. Other features include curb bulb-outs, which force traffic to slow down and give way to pedestrians and bicyclists.

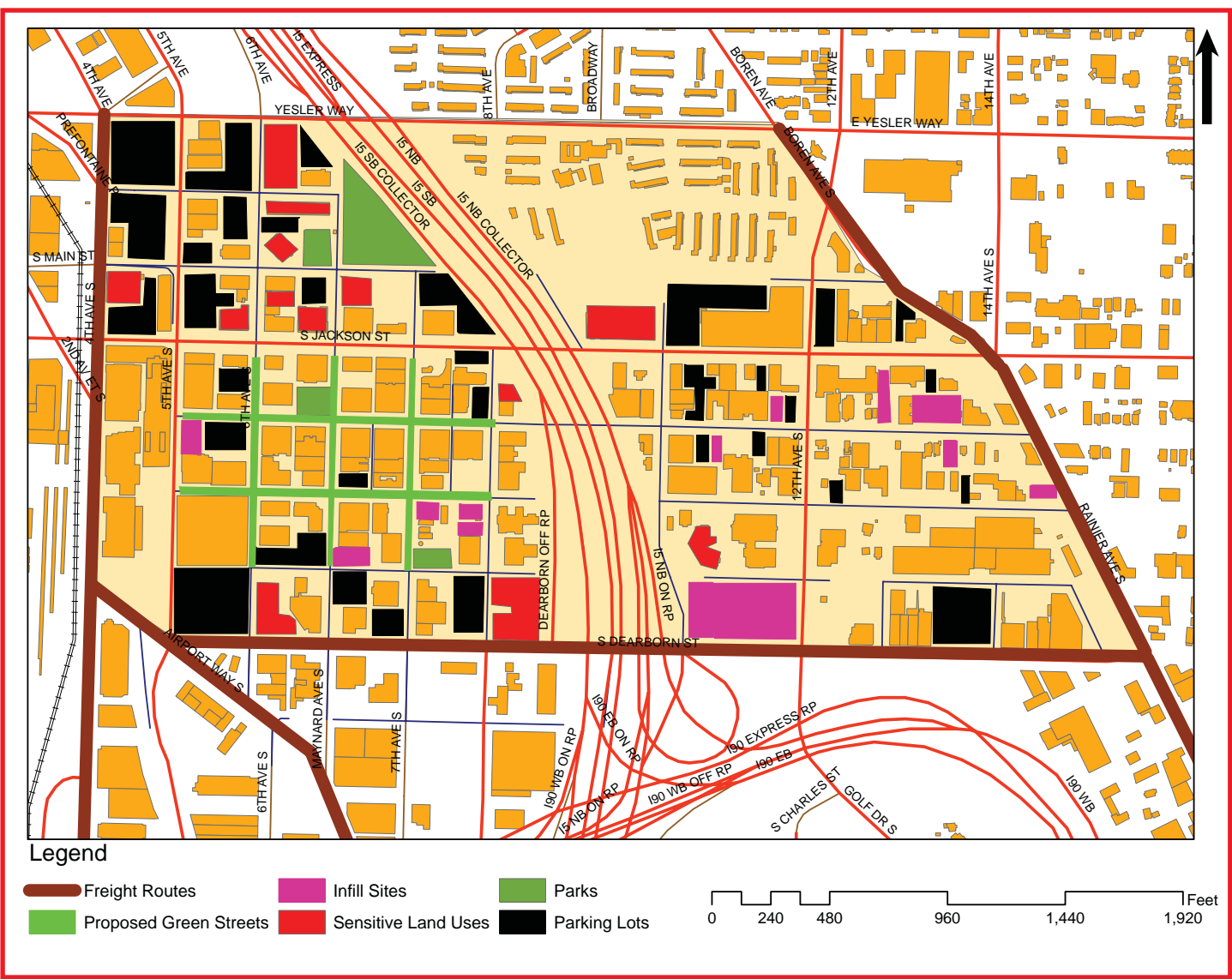
Though the ID is surrounded on many sides by heavily traveled and polluted roads, within the core of the District are calmer, more protected streets that are inviting to pedestrians. Some streets, such as Main and parts of Maynard and Weller have been designated by the City of Seattle as Green Streets. We recommend expanding urban vegetation as a mitigating measure for air pollution:

- Create an “urban air oasis”—a section of the community away from major pollution sources where the air is cleaner and where pedestrians are prioritized over vehicles, through traffic calming methods. This oasis provides free air filtration by adding more vegetation, and fosters pedestrian activity day and night (see illustration)

Reducing Exposure in Sensitive Land Uses

In the ID there are many sensitive land uses located along I-5 or the major bus and truck corridors (Jackson St. and Dearborn St.). (see **Figure 12 about sensitive land uses**) Residents in these structures should take the following mitigating measures:

- Windows facing busy streets, including freeways, should remain closed, especially during times of heavy traffic (morning and evening rush hours), or they should be equipped with air filtration devices or outward facing fans.
- In order to reduce airborne pollutants, tall vegetation should be planted, especially in residential areas along heavily traveled roads



Recommendations for New Construction

The above map identifies parcels with particular significance to the ID clean air strategy. Parcels shown in red are places where a building represents a sensitive land use. The parcels shown in magenta are places where the land is vacant or under utilized, presenting the opportunity for possible infill development or redevelopment. Some of these parcels are currently used as parking lots. Developers of these parcels should be encouraged to design their building with ventilation and loading areas that maximize clean air intake into the building (see below for more details). Developers also should be requested to add green space and landscaping to their projects. Compared to other neighborhoods in Seattle, ID residents are underserved by park space. This problem is especially severe in Little Saigon. Public green spaces are shown below in green.

The new Livable South Downtown Plan encourages mixed-use residential development along Jackson Street and also permits residential building along Dearborn St. and along I-5. For new construction, or for major renovations of existing structures, there are some mitigating measures which should be taken to reduce exposure to polluted air:

- Build no new residential uses, especially senior housing, directly facing Dearborn or Jackson St. or along I-5. Avoid residential uses within 150 meters of high pollution roads, highways and intersections.

Instead, new residential structures should be built facing away from high pollution roads or in the core of the ID along lower-traffic roads

- Truck loading zones should not be located on the street side of a building, and should preferably be located within a covered area in or beneath the structure
- Most new structures include fresh air intake vents that supply the building with outside air. These vents should not be located at street-level, which would cause polluted air to flow into the buildings. Instead, all intake air vents should be placed facing away from arterial streets, on the roof of buildings, or on the side of the building toward the top level

5.2 Recommended Activities: Transportation

Due to the sheer volumes of fossil-fuel-based transportation modes passing through the International District, it seems too exhaustive to even try and mitigate their negative aspects. However, a lot of little things could add up to a big improvement in air quality. Generally, these include methods that reduce the amount of time engines are running to the bare minimum.

For starters, Auxiliary Power Units (APU's) should be installed on all locomotive engines that pass through the International District. This would eliminate the need to idle at King Street Station, which is a common practice among locomotive engineers due to inherent flaws in the outdated design of locomotive engines. While most of them do not do so with the intention of harming ID residents, the fact is that a significant amount of air is polluted just to keep locomotive engines warm. This requires a significant amount of fuel; in fact, idling accounts for 27% of the typical locomotives total fuel use. With the current price of fuel, the cost of installing an APU could pay for itself after three years of use.

Along the same lines, prohibiting the idling of delivery trucks in the International District would also save fuel and our air. Currently, Seattle lacks any enforceable laws dealing with idling. Also, encouraging freight operators to emulate Metro by using Ultra-Low Sulfur Diesel / Biodiesel would reduce emissions related to freight movement.

Lastly, the location of sports stadiums near the ID also have a huge impact on the numbers of vehicles traveling through the ID, and therefore on the air quality. While Metro and Sound Transit do provide special service for games (especially "Homerun Service" on Sounder trains), a more aggressive traffic management program should be promoted to discourage fans from driving to games by providing incentives to use transit and carpool. The University of Washington has been operating these types of incentive programs since the construction of the new Husky Stadium.

5.3 Recommended Activities: Health Impact Assessment

This community-based assessment examined the relationship of land use and transportation patterns within the International District identifying sensitive land uses and proposing a high density area not within proximity to traffic pollution sources. A more in-depth HIA is recommended that could address:

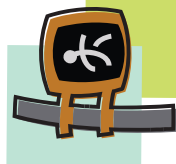
- An improved understanding of transportation pollutant dispersion either through modeling or monitoring
- The potential of exposure of vulnerable populations
- The positive health impacts of the urban "oasis" proposal

Continued involvement of community residents will demystify air quality problems thus empowering community land use decision-making and mitigation options that improve the community health.

4 Steps to Being "Air Aware"

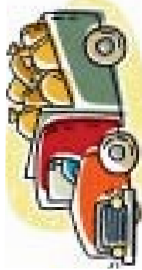
#1 Taking a walk? Go in the morning

Air pollution is lowest in the morning and is highest in the afternoon.



#2 Ask Trucks to cut-back on idling in your neighborhood

Idling vehicles release hazardous pollutants into the air.

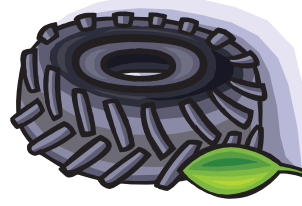


#3 Avoid unnecessary driving

See if you can reduce the number of car trips you take each week. Less driving = less pollution.

#4 Keep car tires properly inflated

Over or under inflated tires can wear-down, releasing tiny pollution particles into the air. It also makes your car more fuel efficient!



Helpful Tips

to avoiding outdoor air pollution in Seattle's International District/Chinatown

The International District *Breath of Fresh Air* Coalition is a partnership between the International District Housing Alliance (IDHA) Youth WILD Program and the University of Washington Department of Urban Design and Planning.

We strive to increase education about outdoor air pollution and healthy urban living.

University of Washington Department of Urban Design and Planning

International District Housing Alliance Wilderness Inner-City Leadership Development (WILD) Youth Program



ID *Breath of Fresh Air* Coalition

ID *Breath of Fresh Air* Coalition




Udp



Created July 2006

Taking A Stroll?

Next time you take a stroll through the International District, avoid high pollution streets, especially during time of heavy traffic.

 = Avoid these Busy Streets



Seattle's International District/Chinatown



Landmarks or Points of Interest

1. Danny Woo Gardens
2. NP Hotel
3. Union Station
4. Wing Luke Museum
5. Uwajimaya
6. IDHA Offices
7. Pac Rim Center
8. Yesler Terrace
9. Hing Hay Park