Everyday Use of Emergency Spaces: A Park Design for Westport, Washington's Proposed Vertical Evacuation Structure

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Abstract

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This thesis explores the integration of hazard mitigation, placemaking, and resilient design in the small coastal town of Westport, Washington, as it confronts the challenges of preparing for a catastrophic tsunami while simultaneously creating a vibrant public space. The study examines the design of an open space around a proposed evacuation tower and investigates how the design can be meaningful and functional for the community during non-emergency periods, as well as seamlessly integrate the tower into the everyday landscape. Through literature review, contextual analysis, and community engagement, the research emphasizes the importance of community involvement in decision-making processes to ensure contextually appropriate and community-driven solutions. The thesis presents a proposed design for the public space surrounding the proposed evacuation tower and highlights the opportunity for rural areas and small towns to serve as innovative models for climate adaptation and hazard mitigation strategies. The research contributes to the broader discourse on resilient planning and design and challenges the urban bias prevalent in the field.

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Chapter 1: Introduction

Figure 1.0: Bird's-eye view of Westhaven Drive along Westport's marina district.
Source: Capture.Share.Repeat

As awareness of environmental vulnerabilities has grown in recent decades, we have come to realize how important it is to be able to adapt and prepare for environmental hazards. This is especially true as climate change continues to alter life for the foreseeable future. At the same time, we are also trying to figure out how to design and plan the built environment to meet contemporary needs and desires. The quandaries of climate adaptation and city planning and design also hold the potential to provide overlapping solutions. For example, if an area becomes more flood prone as the climate changes, a city could use this as an opportunity to create a new wetland nature park. This creates an interesting creative challenge for urban designers and planners to tackle. Environmental challenges are a universal problem, though the specifics vary from place to place. The executions of these projects vary particularly between urban and rural settings. In attempting to address the imposing threats, planners and designers must also respond to the context of each project, considering its location, its related comprehensive plan goals, and community input. It is also important to ensure that designers and planners make an effort to create a space in which the public will want to live out their lives.

These issues of hazard mitigation, placemaking, and resilient design and planning all come together in the small town of Westport, Washington on Washington's Pacific coast as they grapple with the challenge of being prepared for an eventual catastrophic tsunami while seeking to create enjoyable civic spaces in their public realm.

Westport has already begun to address tsunami risk. Just outside of the city limits of Westport is the Ocosta Elementary School, the location for the nation's first tsunami evacuation tower. However, this tower is unable to accommodate the entire population of the town, and it is on the far south end of town. Westport has applied for a grant to construct a new evacuation tower approximately two miles north of the school, at the other end of town. The proposed tower can accommodate the entirety of the industry workers and tourists in the marina during a time of emergency, especially those who are located far from the school's tower. The city has requested that the free-standing evacuation tower have a park around it, providing the city with some much-needed programmed open space. The purpose of this thesis projects it to design that public/civic space around the tower for Westport.

Keeping the issues of small town planning and environmental adaptation in mind while approaching this specific situation leads to two main research questions:

1) How can the design of an open space around an evacuation tower have meaning for the community and be used in times of non-emergency?

2) How can that design help integrate the evacuation tower as a part of the everyday landscape of the community?

Overall, rural places and small towns provide a unique opportunity to demonstrate innovative planning and design ideas, particularly in how to respond to environmental risks and climate adaptation. Through the entire process, the community needs to be engaged and a part of the decision-making process to ensure the proposed changes mesh with the full context of the individual process. In this project, I worked directly with two community leaders over the course of several months and multiple site visits to get a sense of what their desires and concerns were and to get regular feedback on my evolving design. If this design was a build project and it was developed at the time the tower was being constructed, I would have engaged the broader community. However, in these early visioning stages, I worked only with the two leaders instead for simplicity and due to time constraints. Westport, Washington's willingness to be a national leader in tsunami preparedness and environmental risk adaptation puts them at the forefront of a conversation on climate adaptation. Incorporating these emergency spaces into the daily lives of residents and visitors poses a challenge that designers and planners need to seriously consider. The changes implemented in smaller communities can act as an example for urban areas, reversing the typical urban bias that exists within the

literature and practice of planning and design.

When looking at the literature pertaining to rural design and planning, hazard mitigation and climate adaptation, and placemaking, a key element that exists in each is working with community members. Any changes that are made to a municipality's socio-spatial fabric need involve the community to ensure that it reflects the community that will be impacted by said change. This is especially pertinent in small towns and rural areas because when everything is on a smaller scale, it impacts the community as a whole more. Furthermore, in order to make sure that the changes made are beneficial and the improvements to the public realm will be used by the community, it is critical to know what the community wants and needs from a space. Community members define what a place becomes and therefore engaging them throughout the design process will more likely result in a space that is valued and meaningful.

Lastly, people are generally aware of the environmental risks and hazards that exist where they live. As climate change sets in further, people are becoming aware of what alterations need to be made to their community to ensure the longevity of their livelihoods and neighborhoods. The actions taken to prevent or mitigate the impacts of such hazards should reflect the identity and priorities of the community so that the lifestyles that people are afforded by their natural environment can be sustained for as long as possible. Through all of this, a major opportunity lies before rural areas and small towns to act as precedents for appropriate and progressive climate adaptation and hazard mitigation strategies for large, urban, dense cities.

Through this thesis, the precedent-setting potential of smaller communities at risk has been explored and exemplified through the proposal of a tsunami evacuation tower in Westport, Washington. Chapter 2 dives into the literature on hazard risk and mitigation, placemaking and community design, finding the nuance in each of the main topics of inquiry, and expanding upon the importance of community involvement. Chapter 3 provides context for tsunamis and the corresponding adaptation measures involved with them such as evacuation routes and emergency sirens. Chapter 4 provides a detailed portrait of the small town of Westport, Washington to better understand the town, their environmental risks, what they have done to prepare already, and the proposal for a new evacuation structure. Case studies are also presented in this chapter as they provide lessons about evacuation structures and the surrounding site design. Chapter 5 presents the design I propose for the site around the newly proposed evacuation tower. Finally, chapter 6 brings it all together and provides additional Westport development context, lessons learned, and a personal reflection.

Chapter 2: Rural Places and Resilience

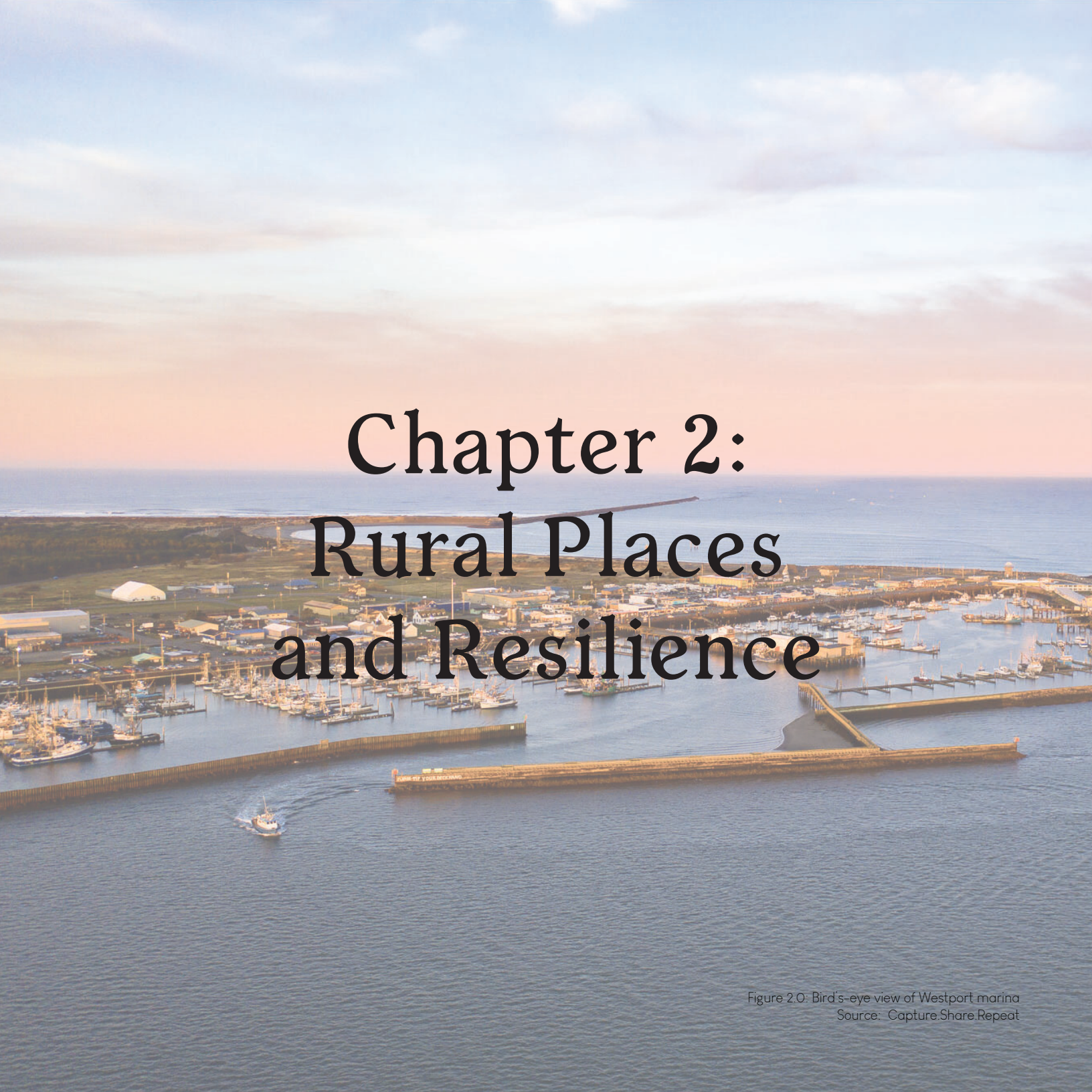

Figure 2.0: Bird's-eye view of Westport marina
Source: Capture.Share.Repeat

Rural Opportunity: Seeing Beyond the Urban

Working with rural towns and small cities can offer planners and designers valuable insights and opportunities to better understand resilience in the face of economic and environmental change. Historically, many towns relied on one or two industries dependent on local natural resources, rendering them vulnerable to shifts or shocks in the larger economy or environment.[1] Consequently, many contemporary rural communities have had to seek out new economic sources of livelihood to ensure their survival, demonstrating their resourcefulness in navigating changing times. As a result, rural communities have become rather creative in ensuring economic and environmental security for their towns, which has resulted in a growing trend of rural tourism, especially after the urban to rural exodus that resulted from the COVID-19 pandemic.[2,3] This newfound economic driver has empowered small towns to explore fresh avenues for investment and development.[4] The combination of a close-knit community and a small economy offers potential opportunities for rural places to be places of planning and design experimentation. Small towns possess immense potential to incubate new ideas that can ultimately serve as precedents for urban communities, flipping the general urban-to-rural bias on its head.

Overall, the attention rural places and small towns receive has changed over the course of time. Small towns and cities are becoming spaces for innovations in response to environmental challenges as well as economic ones. For example, climate change has challenged agricultural and marine livelihoods and caused shifts in practices. Murphy and Williams[5] worked with ranchers in Montana around how they are responding and adapting to climate change by workshopping community responses to different scenarios.[6] Similarly, small coastal towns and cities face significant challenges to sea level rise and tsunami risk. As such they are important sites for innovative solutions to environmental hazards. For example, in the Pacific Northwest of the US, the small city of Westport built the first Vertical Evacuation structure in North America, in response to its vulnerability to tsunami inundation and sea level rise.[7] Similarly, the nearby small town of Tokeland, Washington just completed the construction of the nation's first free-standing Vertical Evacuation Structure in 2022.[8] These innovations remind us that planners and designers have much to learn from these frontline communities seeking to adapt and survive in a changing world.

Design and planning plays an important role in guiding rural places and small towns adapt to economic and environmental changes and support their

innovative responses. For example, an initiative called *Citizens' Institute on Rural Design* within the National Endowment for the Arts works with communities of 50,000 people or less to help fund design workshops to brainstorm solutions for some design issues within their town.[9] The American Planning Association has a division focused on "Small Town and Rural Planning."[10] The design firm Sasaki created a typology project called *Townology* assessing the nuance between small towns across the country and classifying them into seven categories including "Out West Outpost" and "Bucolic Burb."[11] Auburn University has a design/build studio called *Rural Studio* for their architecture students that is located in rural, western Alabama and have completed 200 projects to date.[12] An HGTV program currently on television called *Home Town Takeover* goes into small towns and provides the entire main street with a makeover.[13] Lastly, there is a design guideline written by Alta Planning + Design with a partnership with Montana State University and the National Association of Counties that provides ideas and support for transforming small towns into the desired vision of the community.[14] All of these initiatives and programs remind us of the importance of rural towns and small cities. Rural places will continue to exist even as our urban areas continue to grow. It is vital they are given sufficient resources to support the community's current and future needs. Small towns provide many unique opportunities and challenges. More support is being directed toward smaller places and the momentum does not appear as though it is slowing any time soon.

Hazard Mitigation and Coastal Adaptation

The entire planet is slowly being affected by climate change. Communities small and large are tasked with figuring out the best way to mitigate and adapt to the worst effects of climate change. Sea-level rise is an aspect of climate change that requires attention considering nearly a third of the population within the US lives in coastal counties.[15] On the west coast, it is projected the ocean will have four to eight inches of sea-level rise over the next thirty years.[16]

Sea-level rise and tsunami risk are interconnected phenomena with underlying causal relationships. While the connection between sea-level rise and tsunamis may not be immediately apparent, evidence suggests that sea-level rise can impact the Earth's crust, causing ruptures that potentially lead to seismic activity and subsequent tsunamis.[17] As vast amounts of ice melt and return to the oceans, this redistribution of weight could exert new pressures on tectonic plates, and consequently, there is a possibility of triggering earthquakes worldwide, resulting in an

increased frequency of tsunamis.[18] Furthermore, sea level rise contributes to more erosion, which in turn can trigger landslides that generate tsunamis.[19]

The depth of the ocean is a key factor in determining the intensity of a tsunami. As sea levels rise, there is an increase in the amount of water available to amplify the destructive power of tsunamis. Consequently, elevated water levels would lead to increased inland water inundation, resulting in heightened levels of destruction.[20,21] Consequences of tsunamis include loss of life and destruction of property, as well as erosion and salt-water inundation that can, in turn, ruin cropland for years after an event.[22] Low-lying shoreland is particularly vulnerable to these effects.[23] The implications that come with these projections are significant, and require attention on how best to mitigate the potential devastation and adapt to the future conditions of our planet.

Current Guidelines/Strategies

The complex nature of climate change necessitates complex solutions. Given the considerable risk posed by rising sea levels, there exists a wide range of ideas and strategies aimed at effectively mitigating the most severe consequences. Scholars have developed frameworks and approaches for tackling climate change. Bongarts Lebbe et al. frame the strategies as 'hard protection' and 'soft protection.'[24] 'Hard protection' consists of engineering and construction efforts such as seawalls and artificial reefs to fight against nature. However, these efforts can inadvertently create new environmental issues post-implementation. In contrast, 'soft protection' works in tandem with natural processes and can be more effective in the long run. These protections include efforts such as dune and wetland rehabilitation.[25,26] In North Cove, Washington, a community twelve miles south of Westport, they installed small rocks called "cobble" along the beach to prevent coastal erosion. This has proven successful in the years since.[27] These measures offer a more natural buffer to inundation risk, and reduce the vulnerability of surrounding communities.[28] The development of 'soft' mitigation strategies would benefit tremendously from looking at precedents established in indigenous practices. Building off of ancient knowledge and practices with modern technologies could result in more affordable and adaptable mitigation practices.[29] A drawback of the soft protections is occasional difficulty with buy-in from local officials because there needs to be a solid understanding of several fields of study across an entire region in order to enact these measures effectively.[30] On a surface level, building a seawall provides more obvious environmental impact because a large, cement wall is unnatural and thereby

stands out. In contrast, restoring wetlands is a less obvious intervention because it is executed with natural materials and processes thereby creating a measure that blends in.[31] Griggs and Reguero developed a continuum of "soft" and "hard" techniques for shoreline solutions (see Figure 2.1).

Each environmental risk requires its own set of unique response strategies. Communities must be equipped with apropos strategies specific to the challenges they face. Adapting to the inevitable changes that will come will require accommodation by physical and non-physical infrastructural development. These necessary interventions can be brought to fruition through mediums such as city planning, architecture, and technology.[32,33] Municipal goals vary, but planners generally want to make the town work better for those who live in and visit it, and designers generally use their skills to help the planner's goals come to life. Through this role, they act as facilitators to placemaking.[34] Furthermore, people can acknowledge and embrace natural processes that already exist in an area by taking actions such as constructing wetlands that allow for flooding.[35] In addition to incorporating physical changes to a community, it is also critical to educate people on what to do in the event of a climate emergency.[36] Local outreach projects, both general and targeted, raise

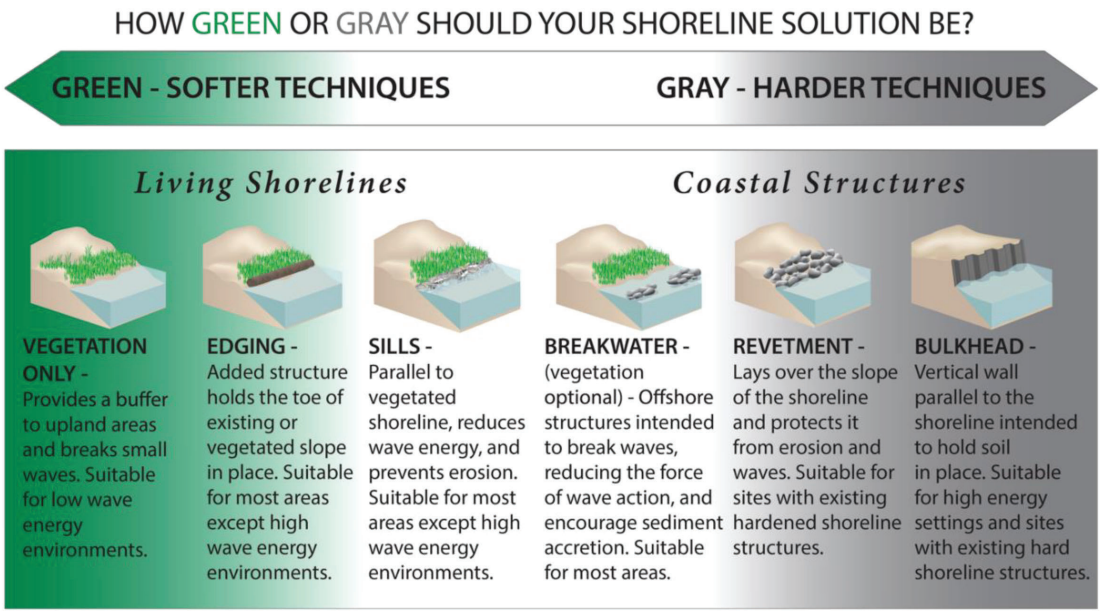

Figure 2.1: Soft versus hard interventions
Source: Gary Griggs and Borja G. Reguero *Coastal Adaptation to Climate Change and Sea-Level Rise*

awareness and assist residents make better decisions to protect themselves from the impacts of future storms.[37] Thorough preparedness for the changing climate to come will consist of multiple strategies that will be deployed both physically within the built environment, and socially, within the culture of the town. By creating evacuation routes, drafting emergency preparedness policies, or requiring buildings to be constructed on stilts, communities can be more prepared for climate risks such as sea-level rise that threaten the livelihoods of those who live there.

The United States government has developed guidelines to help municipalities prepare for climate vulnerabilities. The National Oceanic and Atmospheric Administration (NOAA) Office for Coastal Management has an online course covering adaptation strategies topics such as: understanding the basics, identifying and evaluating options, engaging stakeholders, and learning from others.[38] The National Park Service (NPS) created the *Coastal Adaptation Strategies Handbook* to "focus on policy, planning, cultural resources, natural resources, facility management, and communication / education."[39] The Environmental Protection Agency's (EPA) website has an online toolkit that guides users to understand climate adaptation from a broad perspective of "how much will change?" and "what will the impacts be?" down to specific strategies for planning frameworks and information about funding.[40] Potentially the most useful for local governments is the Federal Emergency Management Agency (FEMA) Building Resilient Infrastructure and Communities (BRIC) grants.[41] These help cities and states fund hazard mitigation projects that would otherwise be unaffordable for their communities. In 2022 alone, $136 million was provided through BRIC grants.[42] Examples of funded projects include: seismic retrofits to a potable water system for the Upper Skagit Indian Tribe as well as typhoon fortification to a Guam Community College.

Environmental Risks and Relocation

A final environmental risk adaptation strategy not previously mentioned is that of relocation. If an area is known to be susceptible to a certain climate risk, it would perhaps behoove a group to relocate to another place entirely where that threat no longer exists. The Biden Administration has paid $115 million to native tribes to relocate their communities away from environmental threats, including the Quinault tribe on the Washington coast.[43] However, relocation is usually the worst case scenario and absolute last resort for a community due to place identity and attachment, and often follows a large, catastrophic climate event rather than preceding one.[44] It can be difficult logistically to make this happen. What incentives convince people to

leave their homes? Is there enough housing elsewhere? Do they move into another community or relocate and rebuild theirs from scratch? How much will it cost and where will funding come from? Will the economic opportunities be the same in a new location? Would people have to learn new skills because traditional money-making practices are tied to the original place? This seemingly impossible onslaught of questions explains why mass relocation of populations is rare.[45] Even the Quinault Tribe has yet to actually relocate their entire community even after years of preparation and answering those difficult questions. Relocation takes time, and alters a way of life. It is a gradual process.

In summary, hazard mitigation and coastal adaptation are critical issues that we must accommodate in the age of the anthropocene. Sea-level rise and tsunami intensity are the main threats to coastal communities. The United States federal government is aware of the risks that these impending climate events pose and has provided citizens and groups with a bounty of resources on best practices for mitigation and adaptation. Strategies include building hard infrastructure such as sea walls or soft infrastructure such as wetlands to accommodate flood events. Within the conversation of mitigation and coastal adaptation, there needs to be a development and recognition of indigenous and local knowledge, especially within rural communities. Working together as a community to combat risk preparation strengthens a sense of identity that exists within a community, leading to them being more resilient and flexible should an environmental threat come to life. Relocating a community is rarely imposed partly due to logistics, and partly due to a sense of place and personal identity.

Coastal Preparation for Environmental Inevitabilities

Urban Bias

As with urban and regional planning more generally, coastal adaptation also has an urban bias. Large municipalities have greater populations and contribute more to the national GDP, resulting in a prioritization of dense, large, urban areas in efforts to make coastal places more adaptable and resilient to change.[46] However, because the realities of these urban areas versus small towns are radically different from one another, their adaptation measures should be approached differently.[47] Effective strategies or access to resources that exist within large cities may not be suitable or available for a smaller town.[48] In particular, small towns tend to have significantly less funding for adaptation measures than large cities due to a

smaller tax base. Small towns have a smaller municipal government, which limits the knowledge base for effective adaptation.[49] FEMA has tried to counter these constraints by prioritizing many BRIC grants for smaller, lower-income towns.

Rural Context

Rural communities are in a difficult yet promising position to adapt to the worst effects of environmental vulnerabilities. Rural places tend to have populations that are more vulnerable to climate change impacts due to their location and lower economic status.[50] Since small towns typically have economies closely intertwined with natural resources, any shifts in the climate and local environment will disproportionately affect the community. Any predictability in livelihoods becomes less reliable as intense natural events become more common.[51] Because of this heightened vulnerability, it is critical that any strategies to offset the worst effects of environmental risk are approached from a rural perspective explicitly.[52,53,54]

In the unique setting of a rural town, professionals are able to provide incentives for individuals to participate in the development of mitigation strategies, and filter external assistance to ensure that it fits into the preexisting fabric of the town. Local governments should also prioritize fostering a diverse, flexible, and adaptable town economy that can effectively respond to prevailing and variable climate realities. While the formal municipalities have important roles to play in the town's prosperity, so too does the local community. By incorporating locals into adaptation strategy development and execution, climate resilience and adaptation measures are strengthened.[56] Small towns have an advantage over large cities in that nearly every stakeholder can voice their opinions, so any decisions in regard to climate adaptation strategies will be more universally accepted.[57] Involving communities in the decision making process fosters a sense of ownership in the changes that occur if the decisions and conversations come from within.[58] Involvement creates the easiest buy-in for the community and results in a more prepared and resilient community.

The Value of Place and Placemaking in a Context of Change

Designers and planners are tasked with thinking critically about places, how people interact with them, and what emotions are tied up in them. When changes occur, local municipalities must think critically about how the identity will be altered, what is acceptable evolution, and what needs to be preserved. As history has shown us, change that happens too quickly and drastically from outside sources within a neighborhood

can have profoundly devastating consequences on the community that resides there. A strategy called 'placemaking' works to mitigate the worst effects and foster the best effects of change. In placemaking, collaboration between planners, designers, and developers and the community ensures that the evolution serves the desired identity of present users with what future users may want.[58]

The distinction between space and place is subtle, but essential to the understanding of placemaking. Perhaps the best definition of "place" comes from Tim Cresswell (2019) as quoted in Gkartzios et al.[59] Place "is an assemblage of materiality, meaning, and practice." The *materiality* consists of what makes up the town including parks, plazas, houses, skyscrapers, shops, parking lots, etc. The *meaning* comes from our interaction with a place through our emotional interpretation of the location. Emotion, whether positive or negative, adds meaning. For example, a park on a bright, sunny day filled with people playing games evokes a very different emotion than the same park on a dark night after a political protest that left the space filled with debris. Emotional interpretation contributes to the transformation of space to place.. Finally, *practice* comes in once people use the space. A park is just an open area until someone enters and starts looking at the trees or meandering through with their dog. Combining all of these elements, a thorough understanding of what a place is starts to become clear. This idea was further developed by Lee and Blackford when they said, "a physical area becomes a "place" when people use, experience, and internalize it."[60]

Placemaking then becomes the practice of taking these elements that make a place and using them to build, design, or strategize the conversion of a space into a place. Nearly every piece of literature regarding placemaking has a slightly different way of defining it. Examples include:

- "[Placemaking is] the empowering human act of putting an imprint on a place and becoming intimate with ones' surroundings."[61]
- "Placemaking is described as a collaborative effort by individuals living within a specific setting to reinvent their surrounding environments."[62]
- "Place-making involves organic, planned, and collaborative approaches to the enhancement of locations for residents and visitors."[63]
- "Placemaking is the interplay of the needs and the aspirations of the community enacted in the design of the built environment."[64]
- "Placemaking seeks to build or improve public spaces so that they also serve physical, cultural, and social objectives."[65]

What is important to note is the collaborative and community aspects of all of these definitions. "Community" and "place" are often used synonymously because the two are so inextricably linked.[66] Communities need a place for gathering, and that place contributes to more communal relationships growing. Community leads to place which leads to more community. This then leads to the development of identity. People may identify with the city they live in or the church where they gather with like-minded folks. A sense of identity contributes to one's sense of belonging and well-being.[67] Place fosters the ability for people to build external community, and internal identity and well-being.[68] Taking all of this into account, placemaking is ultimately people (third-party professionals, city employees, community groups, etc.) coming together to inject materiality, meaning, and practice into a space in a new way in order to provide community and identity.

Throughout this chapter, the ideas of "community" have been brought up, but not yet quite defined. Kenneth Wilkinson, defines community as existing only when there is (1) a defined area where people live, (2) ability to have opportunities to live, work, and play within the boundaries of that area, and (3) a desire to improve their local problems and express identity and solidarity.[69] There must be a shared sense of responsibility and duty to the people and places within a community in order for an identity to rise. Fostering the development of community is an important step for climate adaptation strategies because communities are stronger when they work together. Once community development has begun, it becomes a positive feedback loop where "local identity and a sense of solidarity among residents in the community promote the development of collective efforts to solve local problems, and collective efforts to solve problems promote local identity and solidarity."[70] When there is a strong community, it encourages locals to perpetuate the camaraderie and collaborate together to ensure livelihood longevity.[71,72] Social capital is a major factor in a community's willingness to address adaptation.[73]. In the same way that mitigation strategies need to be specific for rural communities due to their unique context, it is worth noting that because of community identities, two communities with identical environmental threats may choose differing strategies dependent on what each community views as their priority.[74] An understanding of local identity and community involvement is non-optional when it comes to hazard mitigation, particularly in small town settings.

Design Thinking

A major benefit of working with designers is the application of design-thinking. This is an iterative, process-led approach that allows those who are not trained as designers to take part.[75] By involving future users in the design iterations of the space, it will better meet the needs of the specific community and will thus more likely become a welcomed place integrated into the town's fabric. It contributes to the positive-feedback loop of community empowerment – with a place to utilize for activities, the community becomes stronger, which leads to more placemaking.[76] Designers and planners need to still make an effort to include any entity impacted by the development of a project. Design thinking, when applied to community engagement, results in a bottom-up, community-led design that puts people at the center of the project.[77] A more holistic approach to the design process creates a clearer and more effective understanding of the people being served by the project, and this, in turn, will result in a more community-responsive effort. To do this effectively, planners and designers need to uncover who participates in these types of activities, why or why not, and how to harness more community power.[78] Overall, design is a powerful tool that can benefit the community in making new places to give new and more life to relationships within town, but as with all potent tools, it needs to be employed with intention and care.

Role of Community Engagement

As previously stated, the community is imperative to the success of a space blossoming into a place. Without their engagement, it simply won't happen. The locals are experts in regard to spaces within their city and should be treated as such.[79] In particular, if outside planners and designers are brought in to design and develop an area, the locals have known the area much longer and more intimately than the professionals. They likely have knowledge that can only come with engaging with a space and its surrounding context innumerable times over many years. Because of this potentially priceless contribution to the design process, the local community should be considered capable of assisting with the design process.[80] Folks within the community will also know intricacies of the skills and knowledge scattered throughout others in town and tapping into this typically undocumented collective knowledge can provide the community with confidence to contribute to a project that may be otherwise outside their wheelhouse.[81] This ties back to the idea of placemaking as empowerment because

the more the community is engaged, the more they participate in civil matters going forward. Building a stronger sense of community contributes to a strong sense of place identity.[82]

The willingness for a community to engage with a certain space can also be informative of how it is perceived, the preexisting emotional attachment, and place attachment.[83] If many people have a deep connection to a certain place within town, they may be deeply engaged in the transformation of it.[84] For example, if there is an old school that is slated for razing and redevelopment, people may gather to prevent destruction. On the other hand, if something awful happened at a certain location, the community may advocate for the removal of a structure. If there is little to no engagement with it, that too provides insight on the lack of emotional connection to a space. Taking this initial read of community perception of space is not enough, however. It is important to keep the local community engaged throughout the entire process of placemaking to ensure that the final proposal is effective in its mission of creating a place for the people, and otherwise helping heighten a sense of community.[85]

Limitations of Formal Intervention

Hiring third-party designers and planners brings a professional perspective that may not be common in a small town. However, there can be drawbacks to outsourcing this expertise, as such professionals are often not from the community they aim to serve. It is crucial for these professionals to make an effort to understand the community to better inform their work within a place, but this alone does not guarantee success. Ultimately, the responsibility for placemaking lies with the users: the individuals in the community. It is the community's duty to transform the space into a place, and professionals cannot simply impose their proposals and magically achieve the desired outcome.[86] If placemaking is solely carried out by professionals, the space will not integrate into the community in the same way. This is why planning professionals and communities alike benefit from collaborating on these projects. The professionals are able to bring in tools, strategies, and ways of thinking to transform a space, and the community is able to shape the fabric of the space in which they reside simply by living and utilizing the space. This idea is visualized in figure 2.2 drawn from Ellery and Ellery.[87] Their model explores this spectrum of delegated power and the sense of place as an outcome.

Creative Placemaking

A strategy that designers and planners can consider is that of creative placemaking, which typically involves the arts as well as design. Creative placemaking happens "when artists, arts organizations, and community development practitioners deliberately integrate arts and culture into community revitalization work—placing arts at the table with land-use, transportation, economic development, education, housing, infrastructure, and public safety strategies."[88] Examples of the integration of the arts include theaters, public murals, and more. The National Endowment for the Arts has a grant program for implementing these strategies called Our Town that has funded more than 700 projects since its inception in 2011 as well as many other resources for implementing these strategies within a design process.[89] Art is an often neglected aspect within development projects, but working to bring in art-related elements can have tremendous benefits for a community both socially and economically.[90]

Creative placemaking can be used to elevate a sense of place by integrating community identity into the design of a project. Local artists often collaborate with designers and planners to help infuse municipal projects with communal identity through stories and heritage.[91] The personal touches that a community can place on a design encourages participation as part of the process of placemaking.[92] Improving social capital through creative placemaking also contributes to the economic health of a town or neighborhood.[93] This is especially true for smaller towns and suburbs because if people are able to enjoy art and culture within their own town, they do not need to travel to a nearby larger city to do it. Art-related programming in underutilized buildings

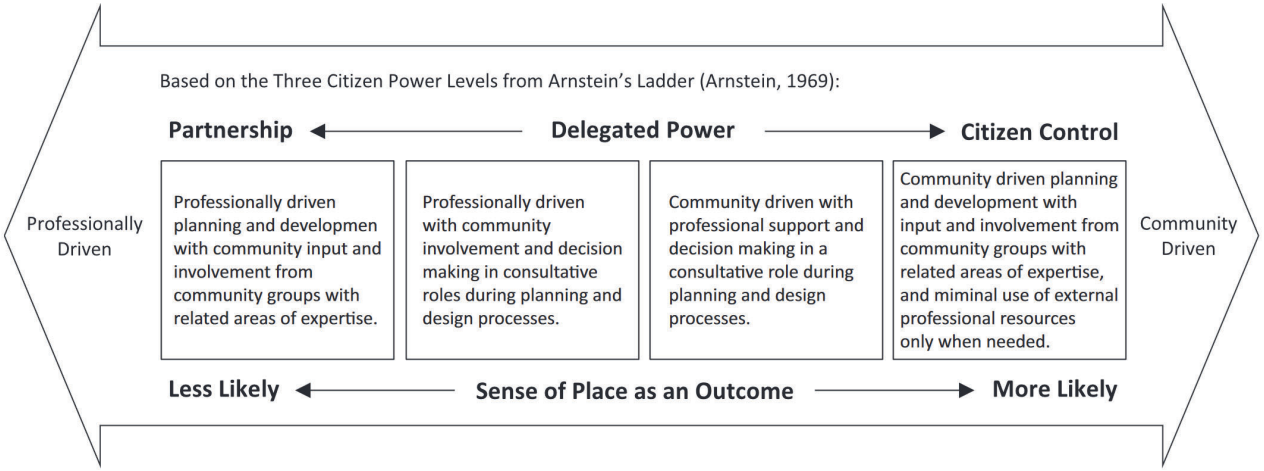

Figure 2.2: Continuum of professional to local participation in placemaking
Source: Peter J. Ellery and Jane Ellery *Strengthening Community Sense of Place through Placemaking*

or vacant lots also creates business opportunities and tax-collecting opportunities. All of this contributes to the local economy by keeping more dollars circulating in a tighter circle.[94] While creative placemaking shows potential economic promises, it is not the only outlet through which planners can try to stimulate the local economy.

Economic Aspects

As industries and economic sources in small towns have changed over the past several decades, and as agriculture declines, towns have been tasked with trying to find a new source of revenue to stay afloat.[95] One strategy has been investing in tourism, which has been gaining momentum in recent years.[96] An increase in rural tourism contributes to the local economy by bringing in dollars from surrounding areas and putting them into the small, local economy. The tourism appeal is generally tied to the natural environment within a small town because there tends to be more open space outside of dense, urban centers. This behooves communities to invest in ecological resilience projects in order to ensure the longevity of this economic source.[97]

In an effort to strengthen a sense of community and contribute to placemaking, locals can participate in determining the tourism accommodations they want to invest in for their town.[98] This reiterates the role of placemaking as empowerment. In particular, an effective strategy to enact placemaking and draw tourists is hosting events. This can work on a neighborhood scale or in a small town. By planning an event, locals collaborate and design spaces for use during festivities. When the space holds an event, it is filled with materiality, meaning, and practice – all the ingredients to make a place.[99]. From the moment of inception through execution, memories are made, emotions are felt, and people mingle and meander. Through participation in planning or attending events, people are brought together and solidify the validity of a place.[100]

Placemaking in a Rural Setting + Tying it All Together

Similar to dense, urban cities, small towns and rural areas are constantly changing. For effective change to be implemented, there needs to be an effort made to understand the community as much as possible, particularly in the modern day as small towns have experienced industrial changes and a general exodus of the population. Because of this, the practice of placemaking is just as important in a small town as it is in a large city.[101]

A common misconception of rural places is that the towns and cultures are stagnant, but many places

are embracing a necessary and vital change to create a distinct identity and ensure a viable future.[102] Tourism is a frequently used strategy within these smaller places, particularly environmental tourism. This makes small towns more susceptible to environmental risks and hazards since it makes up a large portion of many small town's modern economies. As a result, small towns should be investing in hazard mitigation strategies to protect their livelihoods and histories, and can act as an incubator for testing mitigation strategies that planners and designers in cities of any size can use as mitigation precedence. The common thread through this all is community engagement – the community should help determine what is designed in their small towns, what measures need to be taken into account for their environmental risks and hazard mitigation strategies, and should be involved in designing space because community members transform it into place. A local community is a strength that can be made stronger the more they are utilized and engaged.

In this thesis, I take the research summarized in this chapter and apply it to an exercise in planning and design by designing a park for the city of Westport, Washington surrounding a proposed VES. The next chapter will cover tsunamis and VESs in length before diving into the Westport context and proposal. There will be several case studies throughout to provide greater understanding of what is happening with tsunami vertical evacuation measures around the world.

Chapter 2 Endnotes

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Chapter 3: Tsunamis, Evacuation Measures, + Precedents

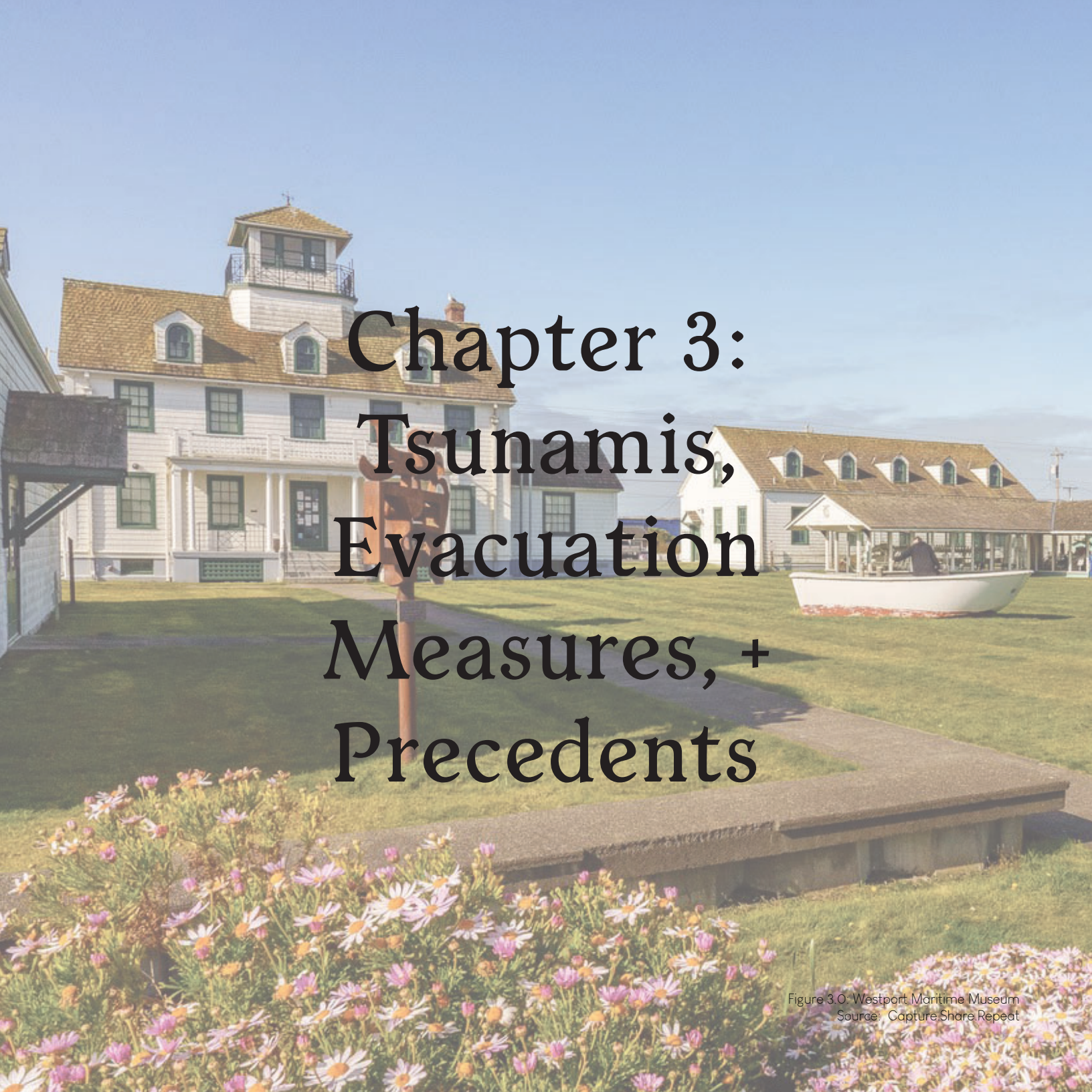

Figure 3.0: Westport Maritime Museum
Source: Capture.Share.Repeat

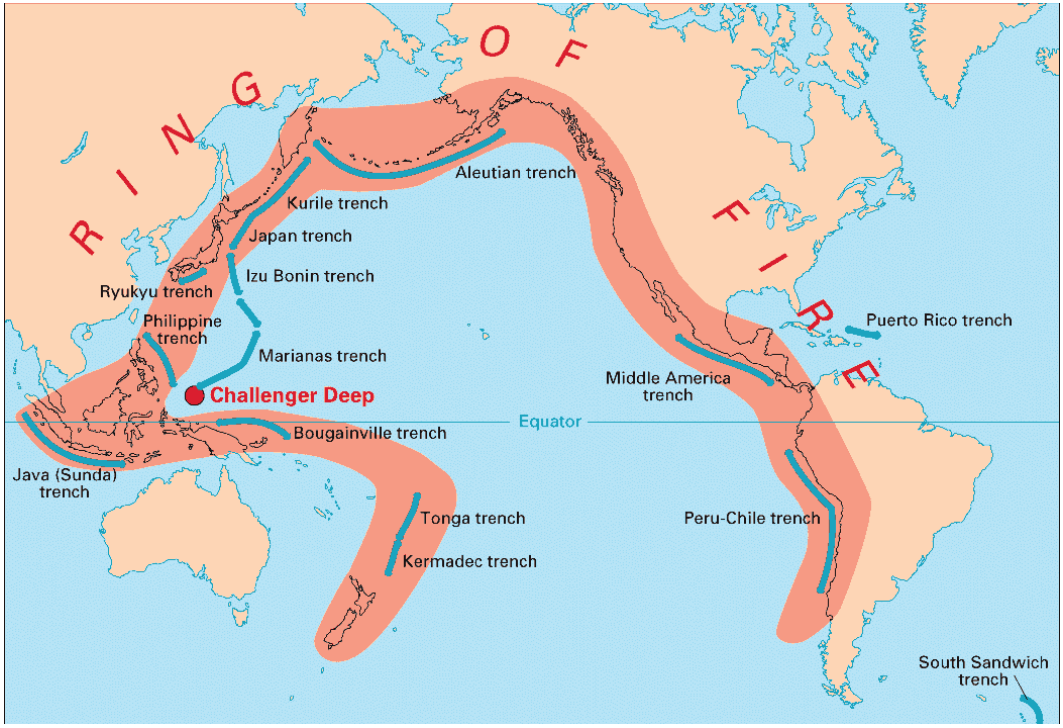

Figure 3.1: The 'ring of fire' visualized on a map. Source: USGS

Tsunamis Explained

Tsunamis are a naturally occurring phenomenon typically triggered by an earthquake taking place beneath or adjacent to the ocean, and less typically by landslides or volcanic eruptions. The displacement of the earth's crust causes a substantial volume of water to surge in all directions, leading to a deluge of water onto the land, which can reach depths of tens of feet.[1] Inland inundation depends on the topography of the land, but can travel upwards of a thousand feet inland.[2] Rather than conceptualizing a tsunami as a series of tall waves crashing on a beach, it can be more accurate to think of it as an inundation of water that acts more as a flash flood. The entire west coast of the US is within the 'Ring of Fire,' a strip of tectonic plate boundaries that cause frequent seismic activity.[3] Tsunamis pose significant danger to humans and their built environments. Two notable tsunamis in recent history reflect the degree of risk and vulnerability well: the 2004 Indian Ocean earthquake and tsunami, which claimed the lives of 228,000 people (likely more) across Asia, and the 2011 Japan earthquake and tsunami that resulted in the tragic loss of 19,300 people.[4,5]

Evacuation Options

Given the unpredictable nature of earthquake and tsunami occurrences, it is important to have emergency preparedness measures in place to ensure that as many lives are saved as possible. This is particularly true of low-lying coastal towns due to their heightened vulnerabilities to the dangers of a tsunami. The most effective life-saving response in a tsunami is to evacuate. Evacuation routes and destinations need to be planned, marked, and kept accessible for use at mere moments' notice.

Figure 3.2: Tsunami Evacuation Route sign on lightpost in Seabrook, Oregon. Source: Tony Webster

There are two types of evacuation measures for tsunamis: horizontal and vertical. 'Horizontal' evacuation measures involve individuals and communities relocating away from tidal lowlands to higher land as quickly as possible in any feasible manner. These evacuation measures are generally most appropriate in places with easy and nearby access to higher ground. Because the mode of transit in horizontal evacuations following an earthquake is typically by foot due to traffic jams and roadway damage making any other mode difficult or impossible, The Washington Geological Survey created maps in 2019 for most of the coastal towns in Washington showing the walk times to higher ground from any point in the community, including Westport.[6] These walk times were determined through the Pedestrian Evacuation Analyst Toolkit created by the United States Geological Survey by considering the elevation changes and obstacles

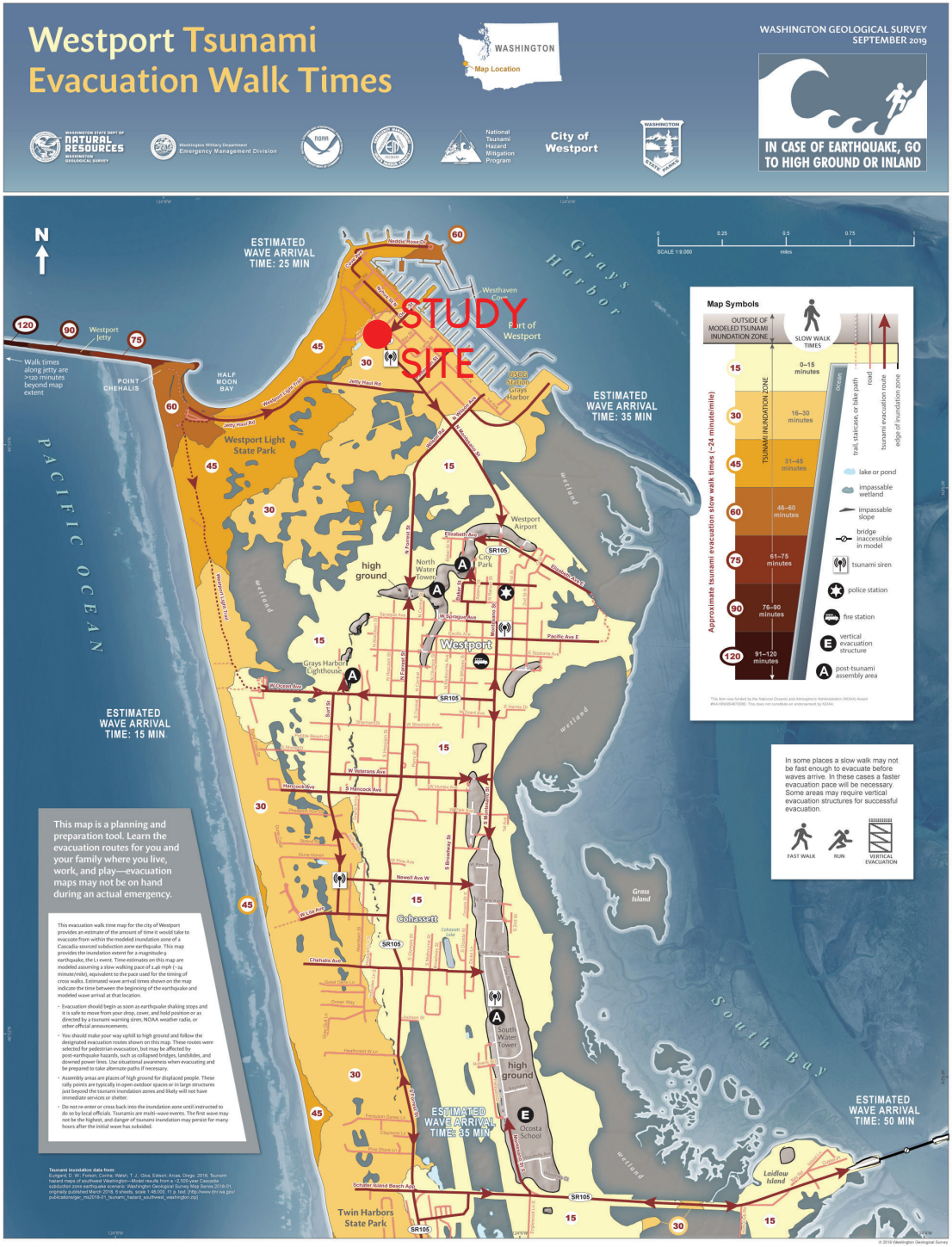

Figure 3.3: Horizontal evacuation times across Westport, Washington. Source: Washington Geological Survey

someone may encounter when trying to evacuate.[7] The location of this thesis site is in the 30-minute walk zone and closely bordered by the 45-minute walk zone.

A common issue with horizontal evacuation is that some places simply do not have nearby high ground to evacuate to. To combat this problem, vertical evacuation strategies have been developed. This mainly consists of constructing towers that serve as a form of "higher ground" and acts as the point of evacuation. Vertical evacuation strategies can include large berms, buildings or free-standing towers scattered throughout a city or town so people have accessible high ground when other options are unfeasible.

The Federal Emergency Management Agency (FEMA) has strict guidelines on how to construct these towers made available in a report entitled Guidelines for Design of Structures for Vertical Evacuation from Tsunamis.[8] This document provides options for vertical evacuation with single-purpose facilities (free-standing towers) or the multi-purpose facilities (towers integrated into the skeleton of another building) and then covers form options such as berms, parking garages, and schools. The report also provides guidance on determining the size and siting of a VES with consideration to surrounding elevation. It then provides more specific engineering criteria such as load determination, tsunami loads, and structural countermeasures to tsunami forces. These guidelines have the strictest requirements of all buildings in a city due to the dire importance of them as emergency structures in the event of a tsunami. Despite the reality that many vulnerable coastal towns across the globe are in need of both horizontal and vertical evacuation plans, these towers are not commonplace because they are expensive, utilitarian in visual aesthetic making them difficult to integrate into the community fabric, and emergency preparedness is often not prioritized. This has detrimental implications for all these vulnerable places.

Most VES towers are free-standing and located in infrequently used corners. Instances of such precedents can be found in vacant lots, parks, parking lots, and along a coastline. Others are incorporated onto the roofs of structures such as schools or museums. The structures are simple with elevated platforms and stairs or ramps to climb to the top. Tvo allow for maximum occupancy during emergencies, the platforms are designed to be free of any obstructions. Because they are typically placed in overlooked areas of the built environment, VESs often exist in isolation from their surroundings. This disconnect between site and structure represents failure to capitalize on the opportunity to establish a meaningful relationship between the VES and the local community. There is potential for concurrent site design and VES design to foster a more cohesive narrative of community, preparedness, and safety.

VES Precedent: VES in Japan

Figures 3.4: Google Streetview Screenshots of VESs across Japan.
Source: Google Maps

Japan boasts an extensive VES network, which played a vital role and proved beneficial during the 2011 earthquake disaster – saving over 5,428 individuals across 37 VESs.[9] There are more than 500 VESs in the country of Japan, and the government is working to certify qualifying high-rise towers as VESs, too.[10] The structures in Japan include both integrated structures and free-standing towers. For the purpose of this thesis, the focus was primarily on free-standing structures since the thesis project involves such a structure. A simple Google Maps search for "tsunami evacuation structure" revealed numerous examples scattered throughout Japan.[11] Most of the towers identified through this method were free-standing in locations such as beaches, parking lots, or within parks. Because of the large country-wide network of VESs, these towers tend to be smaller than the one proposed in Westport, accommodating only a few hundred people instead of thousands. They are often placed seemingly randomly, but likely intentionally in vacant corners of the built environment or casually within parks, often without any cohesion between the tower and the park. Even the few examples of towers found within parks appear somewhat haphazard. It seems as though these towers were simply placed within a park, with no motive to create a cohesive relationship between the two.

Within the context of this project, the examples from Japan serve as valuable references for a robust network of VESs. The Japanese are well aware of, and unfortunately have experience with, the threat posed by earthquakes and tsunamis. Consequently, Japan has made significant investments in these VESs to ensure comprehensive preparedness for these inevitable events. It is inspiring to see such a pragmatic approach to environmental risk, akin to the outlook Westport has adopted toward their own tsunami risk. Moreover, these precedents also offer diverse examples of how VESs could be designed in relation to their surrounding sites. The general absence of a unified design language connecting site design and VES construction in Japan serves as a lesson for Westport demonstrating what should be avoided. It is worth noting that a more integrated design approach to the relationship between a VES and its surrounding site would require more effort from designers and the community, money, and time to concoct, all of which creates a difficult hurdle that some communities may not be able to overcome.

JAPAN KEY TAKEAWAYS:

- It is important for places prone to tsunamis to have a large VES network. Building this network is possible so long as a community puts in the effort to bring it to life.
- Contemporaneous site design and VES construction is lacking in most VES precedents. While this requires more resources, it results in better projects overall.

Figures 3.5 (above and below): Google Streetview Screenshots of VESs across Japan. Source: Google Maps

VES Precedent: Shoalwater Bay Tribe

Tokeland, Washington

The Shoalwater Bay Tribe in Tokeland, Washington, sixteen miles south of Westport, has a long history with flooding. This has only become more true in recent decades as the effects of climate change have started to set in across the globe. 1999, 2006 and 2007 all provided devastating flood events to the community. The shoreline has been eroding, and these flood events continue the erosion, exacerbating their vulnerability to climate changes and tsunami impacts in years to come.[12]

Due to this heightened awareness of risk, the tribe recently constructed a VES in town to contribute to their personal disaster preparedness. Finished in 2022, this VES, designed by engineering firm Degenkolb has a capacity for 400.[13,14] The Shoalwater Bay Tribe contributed money to funding the VES, but it was also the nation's first federally funded VES after the community was awarded a FEMA Pre-Disaster Mitigation Grant.[15] It is located near some residences in an open space with no other site programming present. The location was strategic in being far enough from the coast that it is not at too high of a risk for erosion, while also being close enough to people to provide quick refuge during an emergency.

Although the United States is far from having a tsunami preparedness network as extensive as Japan's, the Shoalwater Bay Tribe VES underscores the increasing importance placed on tsunami preparedness within the communities along the Washington coast. Building these VESs provides a viable future for the people who live in these tsunami-risk towns. A more abundant network of VESs will lead to a more prepared regional community which will lead to a stronger recovery post-disaster. However, like the Japan examples, the Tokeland site also demonstrates a lack of integration and coordination between site design and tower construction. The site and tower serve a single function - vertical evacuation during a tsunami emergency. Programming and designing the site surrounding the tower to function in times of non-emergency is a challenge the community has yet to take up.

Figures 3.6: The new VES on the Shoalwater Bay Tribe land.
Source: Washington Military Department

SHOALWATER KEY TAKEAWAYS:

- There is a growing network of VES construction on the Washington coast
- A standalone VES with no other programming on site or with the structure.
- Brings up the question of when is it appropriate to integrate a VES into another structure versus have it be standalone?

VES Precedent: Museum Tsunami Aceh

Banda Aceh, Indonesia

Figures 3.7: A drone perspective of Museum Tsunami Aceh.
Source: Aceh Tourism

In the devastating 2004 Indian Ocean tsunami, few places were hit as hard as Banda Aceh, Indonesia. Estimates include that there were 129,775 deaths, 38,786 missing and 504,518 tsunami-displaced in Aceh Province alone, where Banda Aceh is located.[16] In order to commemorate such a devastating event, an incredible museum was erected to remember the impact it had on the city and entire country of Indonesia as well as a natural disaster education center. The museum displays artifacts retrieved from the tsunami, photographs of the event, and educational materials about tsunamis, earthquakes, and tectonic plates and their corresponding fault lines.[17] But most importantly, it is also a VES should another tsunami hit Banda Aceh. The building itself is rather striking and the site around it is also nicely planned seeing as how it is the threshold

to a place that could come with some heavy emotions.

Uncovering information about the museum's VES specifics proved difficult, but it remains relevant as a case study. The way in which the community in Banda Aceh has incorporated the museum into their community can be similar in Westport. Because the 2004 tragedy was deeply impactful to the city of Banda Aceh, it is no surprise that this museum was built. The community needed a place to memorialize what occurred and provide those affected by the disaster to reflect and remember what happened. The placemaking around this site has been significant as there are ample emotions present on site when people engage with the museum. In that way, the VES has become a part of the community. While Westport has not experienced a tsunami comparable to the 2004 disaster, a more common tragedy is losing fishermen at sea. Westport wants to incorporate a new fisherman's memorial in the park surrounding their proposed VES. Even without a large museum, the site around the Westport VES should be as calm and serene as the site around the Banda Aceh museum to provide a place for solitude.

BANDA ACEH KEY TAKEAWAYS:

- Insert community narrative onto site by looking to traditional aspects of local culture.
- Combine memorial with VES site to foster community attachment.

Figures 3.8: The rooftop VES in Banda Aceh.
Source: Abdul Hadi

VES Precedent: Gladys Valley Marine Studies Building

Oregon State University Hatfield Marine Science Center

Newport, Oregon

Figures 3.9: The ramp leading to the VES on the roof. Source: Josh Partee

The nation's second VES is in Newport, Oregon (three hours south of Portland, Oregon) on top of a large Oregon State University building.[18] The structure is home to the Gladys Valley Marine Studies within the Hatfield Marine Science Center. The inspiring architecture of the structure includes a large ramp that leads directly to the roof of the building, which has the capability to hold 900 people in the event of an emergency.[19] Additionally, the structure has supplies to support those 900 people for two days.[20] By the time people walk to the top of the ramp and onto the building, they will be three stories off the ground, sufficiently safe above the predicted tsunami water levels.[21] The building was designed by Yost Grube Hall.[22] In total, the structure cost more than $50 million

with funding coming from Oregon State University, the Oregon State University Foundation, and state bonds.[23]

The town of Newport also has a VES in the form of a large hill affectionately called Safe Haven Hill, which has supplies at the top to support people in the event of an emergency. In 2016, the city worked with FEMA to upgrade the mitigation efforts such as clearing a more prominent space at the top of the hill for people to gather, improving signage throughout town on how to evacuate to the hill, and reinforcing the integrity of the hill with retaining walls.[24]

As it pertains to this thesis, the OSU building provides an excellent example of new construction being done with a VES fully integrated into the architecture as well as a fully developed surrounding site design. The evacuation hill also provides precedent on other forms of vertical evacuation forms that are less commonly implemented. The combination of the two vertical evacuation measures displays Newport's commitment to protecting their community and preparing for the inevitable. Any vertical evacuation measures can be expensive and difficult to implement, but when a community utilizes pre-existing entities, such as a large hill or a university, developing a network of VESs across the coast is made easier. It behooves communities to make the most of what already exists rather than trying to start completely anew.

Figures 3.10: Users climbing the ramp to the rooftop VES.
Source: Josh Partee

NEWPORT, OREGON KEY TAKEAWAYS:

- Integrating a VES into already-planned construction makes the most of an opportunity. Funding can be difficult for VES projects so tacking it onto another project can be cost effective.
- Multiple vertical evacuation methods contribute to comprehensive community preparation.

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Chapter 4: Westport Context

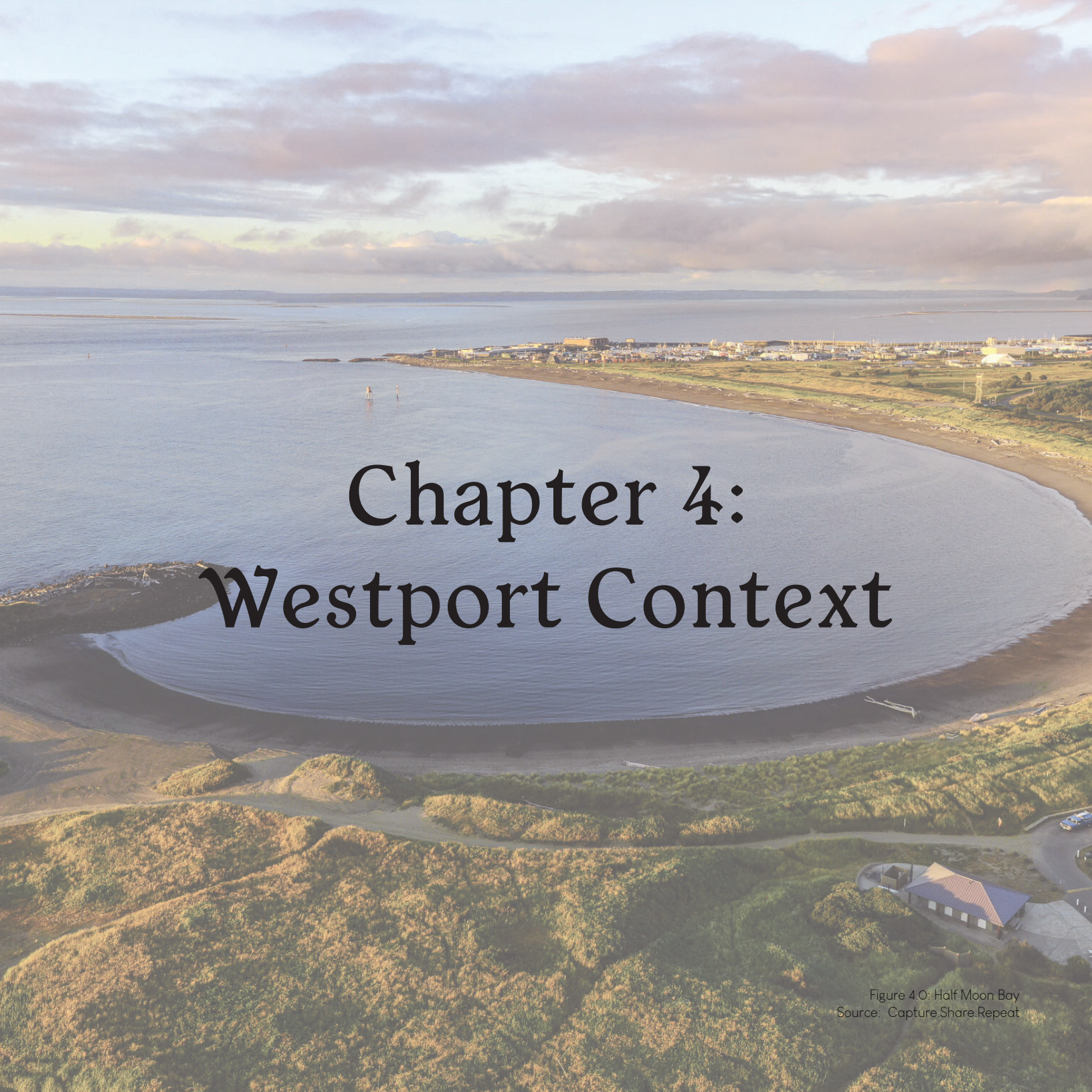

Figure 4.0: Half Moon Bay
Source: Capture.Share.Repeat

Westport, Washington is a small town located in Grays Harbor County approximately 130 miles south of Seattle, Washington and 164 miles north of Portland, Oregon. It lies along the Pacific coast on a peninsula that makes up one half of the mouth of Grays Harbor, which is also home to Aberdeen and Ocean Shores. Figures 4.1, 4.2, and 4.3 show the location of Westport on multiple scales. For anything that locals are unable to find in Westport, they must drive or bus to Aberdeen, which is 20 miles away. The small city covers an area of 3.69 square miles and a population of 2,213 giving it a density of 600 people per square mile per the 2020.[1] Even though the town is far from any large metropolises, it is not quite "rural" due to its density of population and prolific industry which has evolved and sustained since its 1914 incorporation as a city.

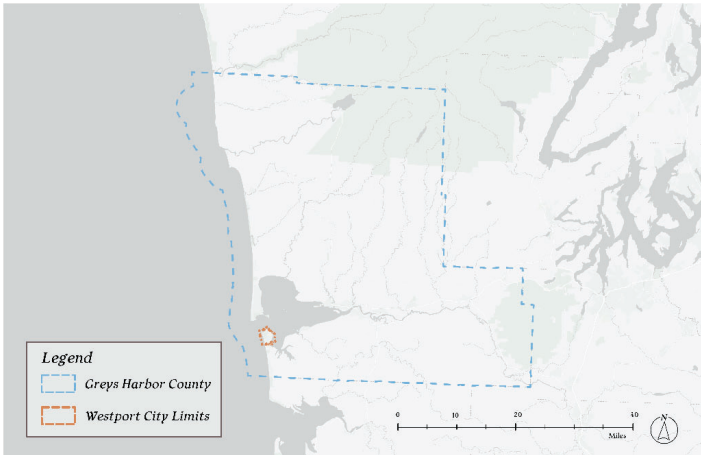

Figure 4.1: Map of Grays Harbor County with Westport outline
Source: Grays Harbor County GIS

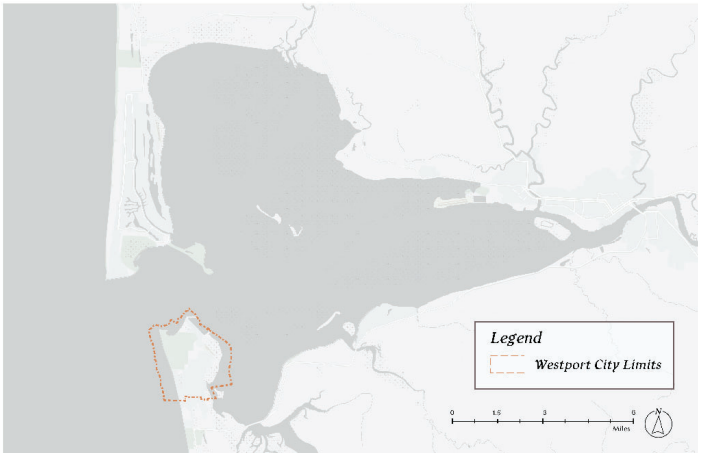

Figure 4.2: Map of Grays Harbor with Westport outline
Source: Grays Harbor County GIS

Community Profile

It is important to understand the basic demographics of the city in order to imagine the park users more appropriately. The average age of Westport's population is 49.4 years of age, and about 15% of the city is younger than 18 years of age. 25% of the population is over the age of 65, making it a popular

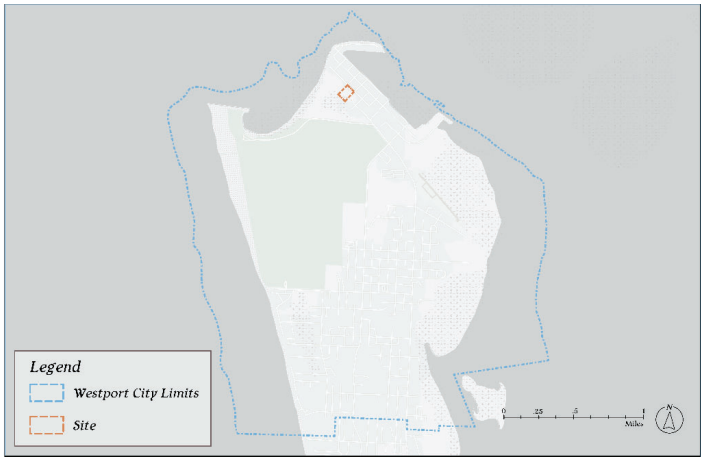

Figure 4.3: Map of Westport, Washington
Source: Grays Harbors County GIS

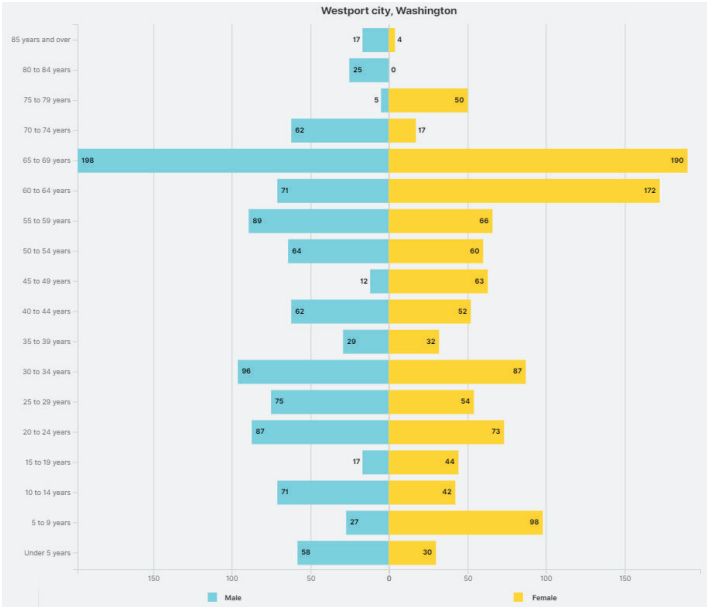

Figure 4.4: Population pyramid of Westport, Washington
Source: US Census Bureau

retirement town and resulting in an employment rate of 46.5%. Figure 4.4 displays the population pyramid of the city showing how gender and age is spread across the city. Professions in the city are often directly or indirectly affiliated with maritime industries such as fishing, the coast guard or boat building. 85% of the population is white with limited diversity. The median household income is $51,354 per year.[2]

Westport operates much more as a robust small city than a rural village with limited resources; there is a grocery store, police station, full K-12 school system, small parks division, and commercial marina district where most tourism commerce is located. Westport Light State Park is the majority of the land of the peninsula on which Westport is located. It is a day-use park spanning 560 acres and boasting 1,215 feet of shoreline.[3] This extensive beach access draws visitors from all around, including surfers who brave the water even in the coldest months. Other than the state park, there are a couple parks in town that have traditional programming such as a basketball court, a playground, several baseball diamonds, and picnic shelters.

Study Site

The focus area for this thesis is located on the north side of town in the marina district, three blocks in from the main waterfront. Figure 4.3 outlines the site in orange in the city context. As shown in Figure 4.5, it is made up of two parcels; one owned by the City of Westport and the other by the Port of Grays Harbor. The dimensions are approximately 300 feet by 390 feet giving it an area of 116,319 square feet. The site is relatively flat with only a six foot difference in elevation between its highest and lowest points. The site has various businesses, services, and infrastructure surrounding it. To the east is a crab processing plant, to the south is a sliver of land owned by the Port of Grays Harbor that lies within the highway right-of-way, to the west is the city's wastewater treatment plant, and to the north is a privately-owned vacant lot with potential for development. There are roads on three of the four sides of the site: the north road is unpaved and filled with potholes that dead ends into open space, to the east is an arterial, and to the south is Montesano Street, which serves as the main road leading to the marina from the south side of town. Montesano Street is one of the busiest roads in town with a consistent flow of traffic entering and exiting the marina. Notably, this is the only road along the site that features a sidewalk. The zoning for the site is currently designated for tourist commercial and recreation and parks. However, the zoning can likely be easily modified to accommodate any specific needs that the city may have – a major perk of small town planning! The two parcels are currently utilized as a compact parking area for the crab processing plant located across the street. During summer festivals, the rest of the site is frequently used for overflow parking. Due to the lack of usage of these sites, it is prime for a development opportunity, which is part of the reason for the VES proposal on site.

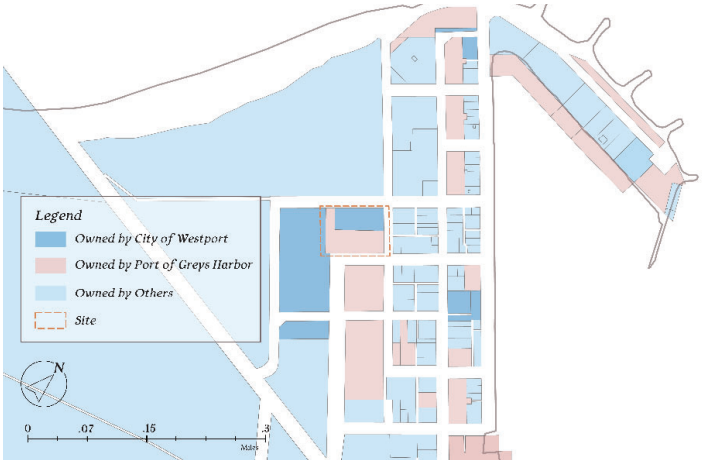

Figure 4.5: Map of parcels in marina district
Source: Grays Harbors County GIS

Figure 4.6: Map of Cascadia Subduction Zone
Source: Federal Emergency Management Agency

Figure 4.7: One of four tsunami sirens in Westport.
Source: Author

Westport's Vulnerability

Given its location on the coast, Westport is located in an area at high-risk for tsunamis. It sits along the Cascadia Subduction Zone (see Figure 4.6), a fault stretching 1,000 kilometers along the Pacific coastline of North America. Within the Zone there is a constant risk of a magnitude eight or nine earthquake at any given time.[4] The last earthquake of this size occurred in 1700, and is estimated to occur every 234 years, making the area almost 90 years overdue.[5] Should the earthquake occur, a subsequent tsunami will ensue and cover the vast majority of Westport with a huge swell of waves in approximately 20-30 minutes. There are currently four tsunami sirens and one vertical evacuation structure within Westport.[6] (See Figure 4.7 and Ocosta Elementary School precedent study on page 50)

Westport is also one of many communities across the state of Washington that has participated in *Project Safe Haven*, a project initiated by Washington's Emergency Management Division (EMD).[7] The project, which is jointly supported by FEMA, NOAA and state and local agencies, is "a grassroots, community-driven public process currently taking place on the Washington Coast to identify areas for future vertical evacuation structures. Partnering with local residents, its mission is

to develop a community responsive vertical evacuation strategy along the Washington coast"[4]. As part of this project, the Westport community collaborated with design and planning professionals to develop several versions of a sustainable Vertical Evacuation Structure (VES) contributing to a network of structures across the coast. They explored various types and quantities of VESs, as well as different programming options for each site (see Figure 4.8). Although they did not consider the exact location discussed in this thesis, they examined two other sites in the marina area located a few blocks away.

In 2019, the City of Westport applied for a Building Resilient Infrastructure and Communities (BRIC) grant through the Federal Emergency Management Agency (FEMA) to fund a new VES in the city. The grant has not been granted or denied as of yet. The construction of this VES would be the first of many such structures for the coastal community at large following the plan laid out in *Project Safe Haven*. The VES was designed by an engineering firm Degenkolb and an architecture firm Rice Fergus Miller (see Figures 4.9, 4.10, 4.11), Inc. satisfying the FEMA "Guidelines for Design of Structures for Vertical Evacuation from Tsunamis". The height of the tower's lower platform is 40 feet per the guidelines with an upper platform at 50 feet. The VES would fit a maximum capacity of 2,000 people. It includes

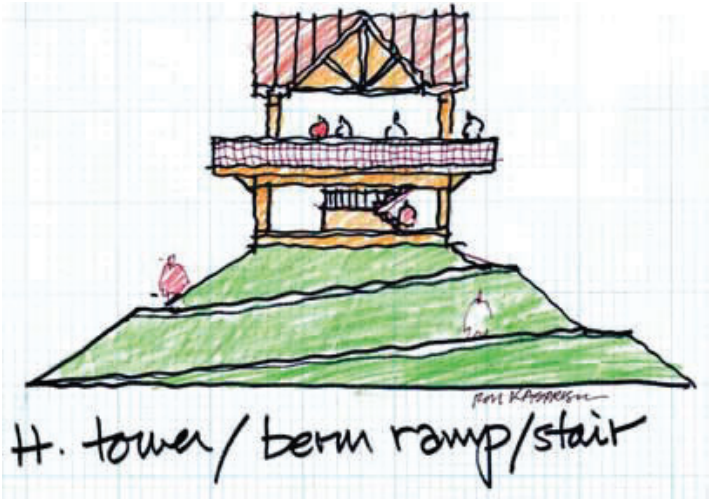

Figure 4.8: An example of a VES from *Project Safe Haven*.
Source: Washington Emergency Management Division

staircases and ramps for access, as well as a small stage on the ground level to encourage usage in times of non-emergency. It is a simple yet burly design, both large and effective. However, the designers gave little thought to the surrounding site. The rest of this thesis pertains to the park design around the VES, as the city has requested.

Project Vision

Drawing inspiration from its rich coastguard history, Westport envisioned the park as a celebration of its maritime roots and on-going coastal industry. In addition to the VES, the city also requested that a

Figure 4.9: A rendered vignette of the proposed VES.
Source: Degenkolb Engineers

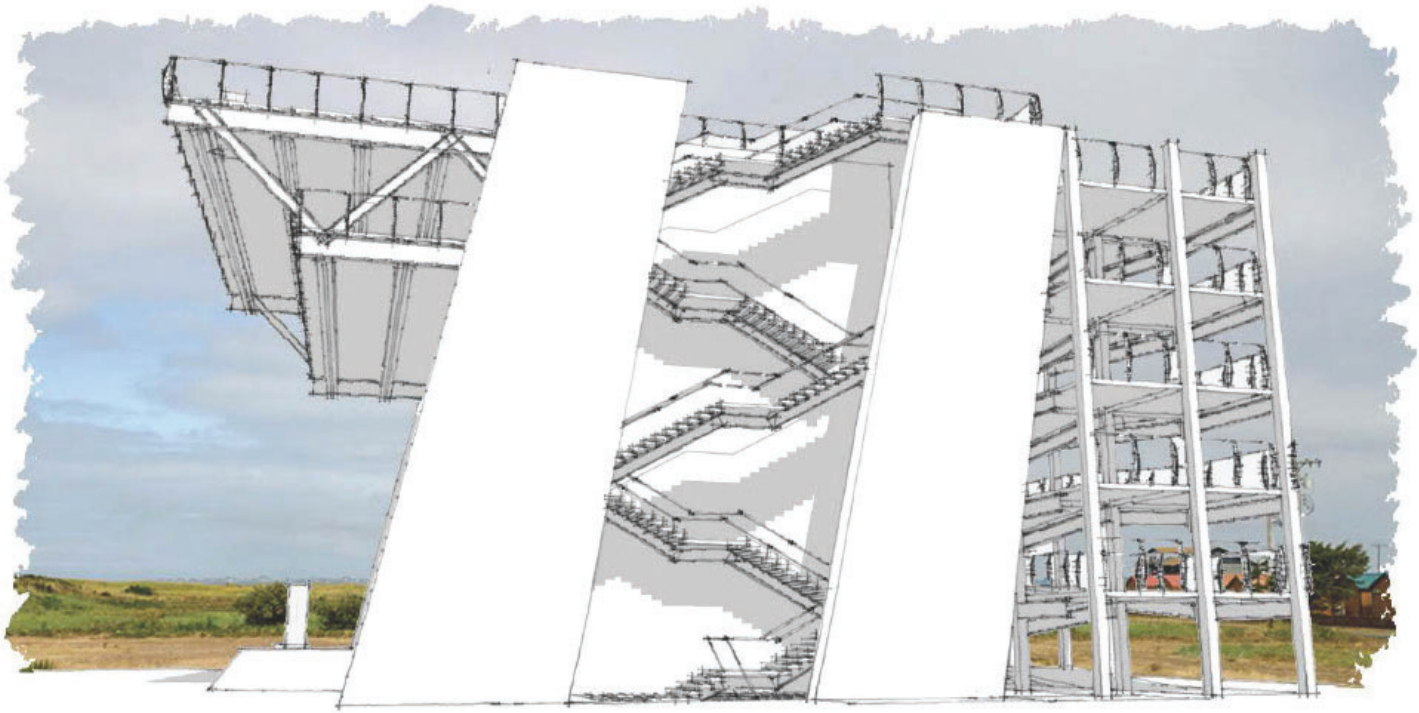

Figure 4.10: A rendered vignette of the proposed VES.
Source: Degenkolb Engineers

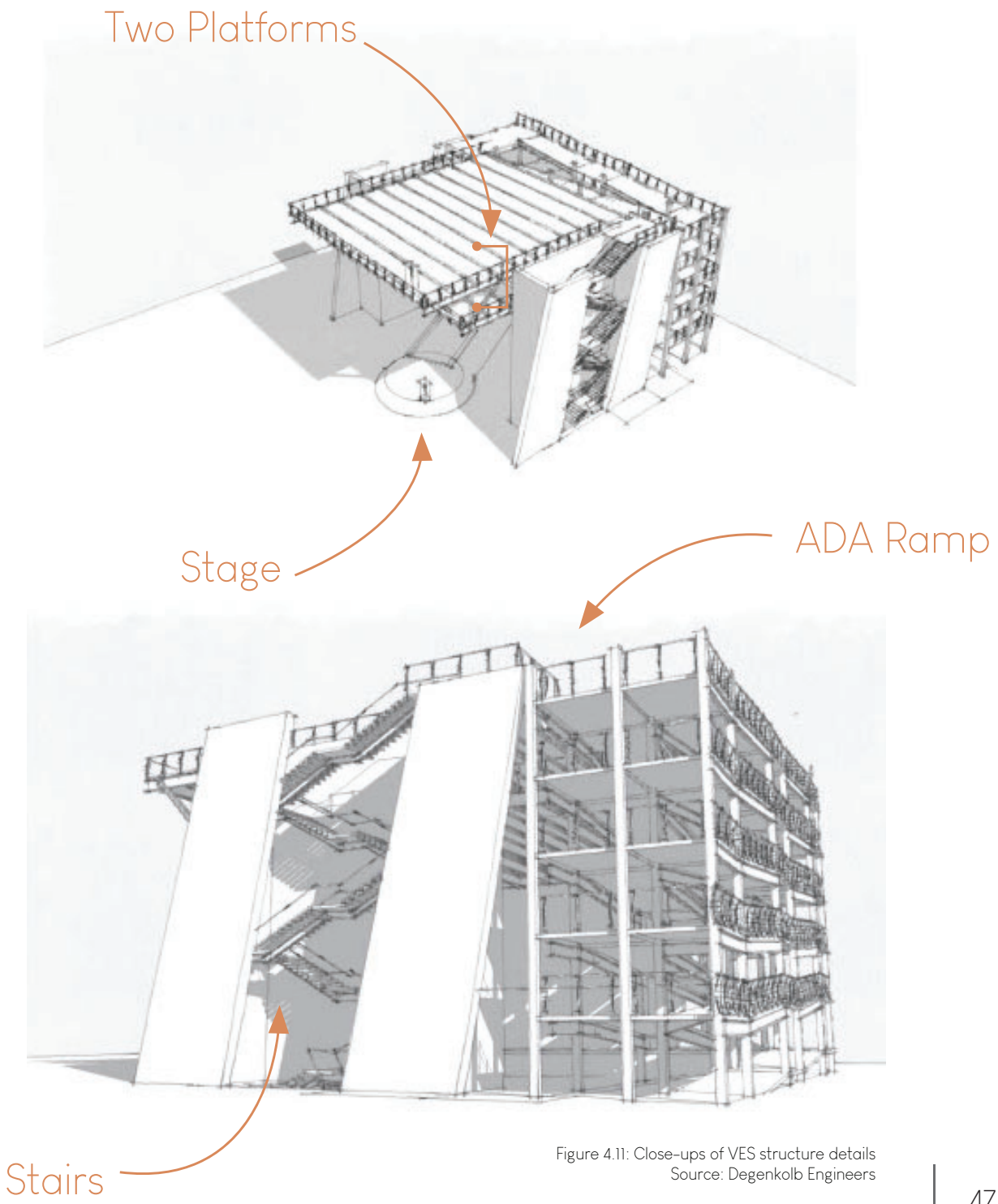

Figure 4.11: Close-ups of VES structure details
Source: Degenkolb Engineers

large replica of an historical boathouse that was once in town be built on-site (see Figure 4.13). This boathouse would be used to store historical coast guard boats that could then be brought out during festivals. The city also wanted a new version of a fisherman's memorial. Though Westport already has a fisherman's memorial (see Figure 4.12), the town requested that a new one be brought into the park design. While the original maintains its historical value, it is not very people-friendly; It is located in the center of a roundabout and its far distance from the marina does not encourage foot traffic or community usage. Incorporating a new iteration of the memorial into the park is an opportunity to create a more central, comfortable and serene environment for local friends and family remembering loved ones lost at sea. Lastly, the plans include a playground (see Figure 4.14) because there are not many in town and none in the marina district. With all of this information in mind, the task of designing a park around the VES that creates a space for the community to use in times of non-emergency begins.

Because a VES is simply a large structure that needs to have elevated space accessible during an emergency, there are a variety of options, such as commercial buildings or parking lots, for how this structure could be imagined. However, because the majority of the structure's lifetime is used in times of non-emergency, it is perhaps more important to think of what the structure could be used for in these times. By placing a VES on top of an already large structure that commonly exists within a city, including grocery stores or parking garages, it would create a more functional VES within the city's fabric. In dense urban settings, there are more options for dual-function structures since there are more large buildings such as apartment buildings, office buildings, and theaters. Such options are more limited in a less urban setting. In Westport for example, there are many warehouses used by the fishing and boat building industries present in town that could potentially double as a VES. *Project Safe Haven* proposed constructing an industrial park with a parking garage and festival space, a large community market with a parking lot, or simply an observation tower paired with warehouse space. It is critical to think about the setting in which the VES is being installed; it would be a missed opportunity for a VES to function as solely a tool of emergency preparedness. By creating a space that serves the local community in times of non-emergency, the space can provide the community with a place to live out their daily lives. In using this area, locals will become familiar and develop a relationship with the park and VES long before it is ever needed during a tsunami emergency.

Figure 4.12: The current Fisherman's Memorial in town.
Source: Author

Figure 4.13: The historic boathouse to be replicated on site.
Source: Westport Maritime Museum

Figure 4.14: A precedent of the type of playground imagined for the space.
Source: ID Sculpture

VES MODEL: Ocosta Elementary School
Westport, Washington

Figure 4.15: Children performing a tsunami drill at Ocosta Elementary School. Source: TCF Architecture

After participating in *Project Safe Haven*, Westport adopted a fervent attitude toward tsunami preparedness. In 2013, communities in the Westport area voted to approve a $13.8 million bond issue to construct a VES within the infrastructure of the new elementary school that was to be built.[8] It is remarkable the community decided to fund this project on their own, not relying on any federal or state dollars to help fund it. Upon completion in 2016, this was the first VES in the entire United States. Located just south of the city limits of Westport, the structure is integrated with Ocosta Elementary School, built atop their school gym. Should the tsunami hit, anyone in the surrounding area is encouraged to use the VES for it can hold approximately 2,000 people, and the school district has only approximately 700 students and faculty in total.[9] Since the construction of this school gym, there have been other VESs built in the US and proposals for many others.

This precedent demonstrates how a VES can double as an everyday asset to the community by adding it into the functions of another structure. The schools are used everyday in times of non-emergency fostering an intimate understanding of the place for community members. Furthermore, the community power involved in this project speaks to the potential and capabilities of small town planning. The school needed to be replaced already, and the taxpayers and community members took it upon themselves to fund this important project. The estimated cost of the construction before the VES

Figure 4.16: Ocosta Elementary School
Source: Wired Magazine

integration was $16 million, and after the VES had been incorporated, the bill came to $18.3 million[9]. This is not a significant increase in the cost of the project, and points to the feasibility of incorporating more VESs onto any new construction projects throughout the entire western United States. All being said, the proposed VES that this thesis is studying would not be integrated into a structure in town. It will not be an addition to an existing part of a school, warehouse, or parking garage. Instead it will be built as a standalone structure which in turn gives back to the community's daily life as an event space and social hub close to the marina. Designing a park around the new VES will help do just that.

OCOSTA KEY TAKEAWAYS:

- Integrate VESs into new structures by requiring all new construction to double for tsunami evacuations
- Integrate VESs into everyday places by integrating them into structures people already visit frequently such as schools, grocery stores, or parking garages.

Chapter 4 Endnotes

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9. Doughton, Sandi. "'It Will Happen Here': Washington Coast School Builds Nation's First Tsunami Refuge | The Seattle Times." *The Seattle Times*, June 10, 2016. https://www.seattletimes.com/seattle-news/it-will-happen-here-westport-school-builds-nations-first-tsunami-refuge/.

Chapter 5: Proposal

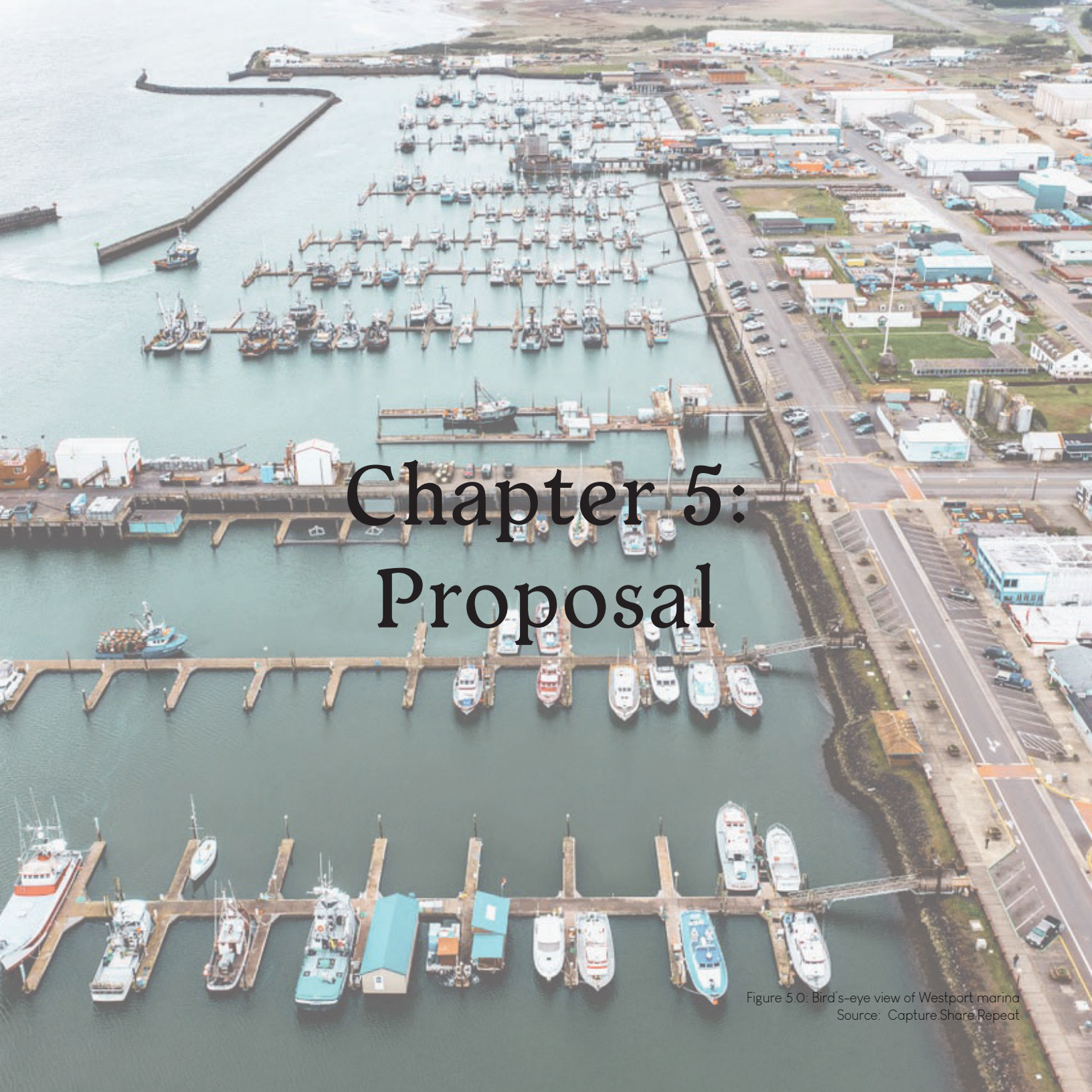

Figure 5.0: Bird's-eye view of Westport marina
Source: Capture.Share.Repeat

In this chapter, I synthesize much of the literature I read within the context of Westport by crafting a proposal for the Westport Vertical Evacuation Structure (VES) site. This chapter begins with establishing the goals for the projects then works to orient the site and introduce the first iteration of concepts, and lastly shows the final proposal.

GOALS

After extensive research and conversations with city employees and community members, three main goals emerged for this project:

(1) to make the Vertical Evacuation Structure (VES) familiar and accessible;

(2) to encourage year-round use of the VES and surrounding park; and

(3) celebrate the maritime history of Westport. Each of these will be explained further below.

First and foremost, the VES needs to be *familiar and accessible* to ensure its effectiveness as a life-saving structure. Residents and visitors should be aware of the structure's location and how to access it. Familiarity with the VES can be achieved by building something that serves the community in times of non-emergency, and secondly, by enabling residents to navigate the grounds comfortably. To promote this, the VES will remain accessible 24 hours a day without any fences, locks, or gates. Additionally, it will serve as an observation deck, offering views of the city and ocean, and encouraging regular visits to the site. The proposed park that will surround the VES will also encourage regular visits by locals, even when not accessing the VES itself. Constructing a park around the VES will support daily use. A strong sense of familiarity will contribute to an ease of navigation by users in times of emergency.

A second goal for the community is to *encourage year-round use* of the site by both locals and visitors. As a result, programming on the site is intended to offer a recreational area on the north side of Westport city, where there is currently a lack of programmed open space despite being the city's hub for recreation. Events such as the annual Pirate Daze utilize the entire marina area, and would do well with having more areas to use. Furthermore, year-round usage of the site as a park will activate familiarity with the VES, which increases the likelihood of effective evacuation strategy in case of a tsunami.

Lastly, the project aims to *celebrate the maritime history of Westport*. The city's settlement and port development can be attributed to the coast guard, and their presence in the city continues to this day. Once the city became more established, a strong fishing industry started to grow. Westport was once

Figure 5.1: Study site with surrounding context
Source: Author

called the "salmon capital of the world" due to the large quantities of Chinook and Coho salmon caught there annually.[1] To commemorate this extensive history, a maritime vernacular will be incorporated into the park through a fisherman's memorial and a playground with ocean-themed elements.

ORIENTATION

The 300-foot-by-390-foot site is oriented at roughly 45 degrees to the cardinal directions -- i.e. the edges of the site face northeast, southeast, southwest, and northwest, and the corners face north, east, south, west. For purposes of depicting and describing the site in this thesis, I show the site at right angles to the page, and refer to the corner of the site that is actually pointing east as the "southeast corner', and the side of the site that faces southeast as the "southern side", etc. As evidenced in Figure 5.1 through 5.5, the site is essentially flat and would likely require grading during the construction phase. Presently, the only feature on the site is an unpaved parking lot in the southeast corner, primarily serving the adjacent crab processing plant.

The southern side of the site (see Figure 5.6) is bounded by a major road leading into the marina district, which is buffered by a triangular right-of-way. The eastern side adjoins an arterial road, while the northern side consists of an unpaved area that dead-

Figure 5.2: Study site with surrounding context
Source: Author

Figure 5.3: Study site with surrounding context
Source: Author

Figure 5.4: Study site with surrounding context
Source: Author

Figure 5.5: Aerial photo of study site.
Source: Author


State Park
Privately-Owned Lot
Site
Wastewater Treatment Plant
Port of Greys Harbor Right-of-Way
Google Earth

Figure 5.6: Study site with surrounding context
Basemap Source: Google Earth

ends at a privately-owned lot. Noteworthy structures in close proximity include the crab processing plant to the east and the city wastewater treatment plant to the west.

During the initial site visit, it was surprising to experience the minimal presence of the wastewater treatment plant on the site. It feels far away and the structures are relatively small – a win for the design potential. Moreover, the site exhibited a convenient and organic connection to open space and beach access. Navigating around the site, one could easily find oneself on the beach exploring the sand dunes and crashing waves. In response to the city's programming requests, the primary elements sought for incorporation into the design include the VES, a replica of a boathouse, a commemorative space for fishermen, an expanded playground area, and parking due to the car-dependent nature of local life.

The first step in the design process involved playing with the arrangement of main elements. It became apparent that placing a fisherman's memorial in the northwest corner of the site would offer the most direct connection with the open space while minimizing proximity to the roads. This placement situates the memorial in the quietest corner on the site, establishing a tranquil and shielded area conducive to reflection and remembrance. Additionally, the strategic planting of native trees on site, particularly along the western side of the site, serves multiple purposes. It allows a visual barrier between the site and the wastewater treatment plant and it helps mitigate the impact of prevailing eastward winds. As the layout of elements began to unfold, a central plaza naturally emerged. This central gathering space would offer significant benefits, as the city currently lacks such a central space. It would facilitate space for the unveiling of boats stored in the boathouse, provide an audience area for the integrated stage within the VES, and expand the viable vendor space during summer festivals.

DESIGN CONCEPTS

When beginning to design the site, I set out with a map of the site and a list of programming proposals. I began playing with the orientation of elements and making judgment calls on what did and did not work based on the surrounding context of the site. I also worked with information I received from Kevin and John about their desires and vision for the site. The three following concepts were the result of this ideating and occurred sequentially.

Concept 1 (Figure 5.7) has the VES crossing parcel lines into the right-of-way in the southwest corner because the city encouraged exploring this extra space as a possibility. Placing it here would increase visibility

Concept 1

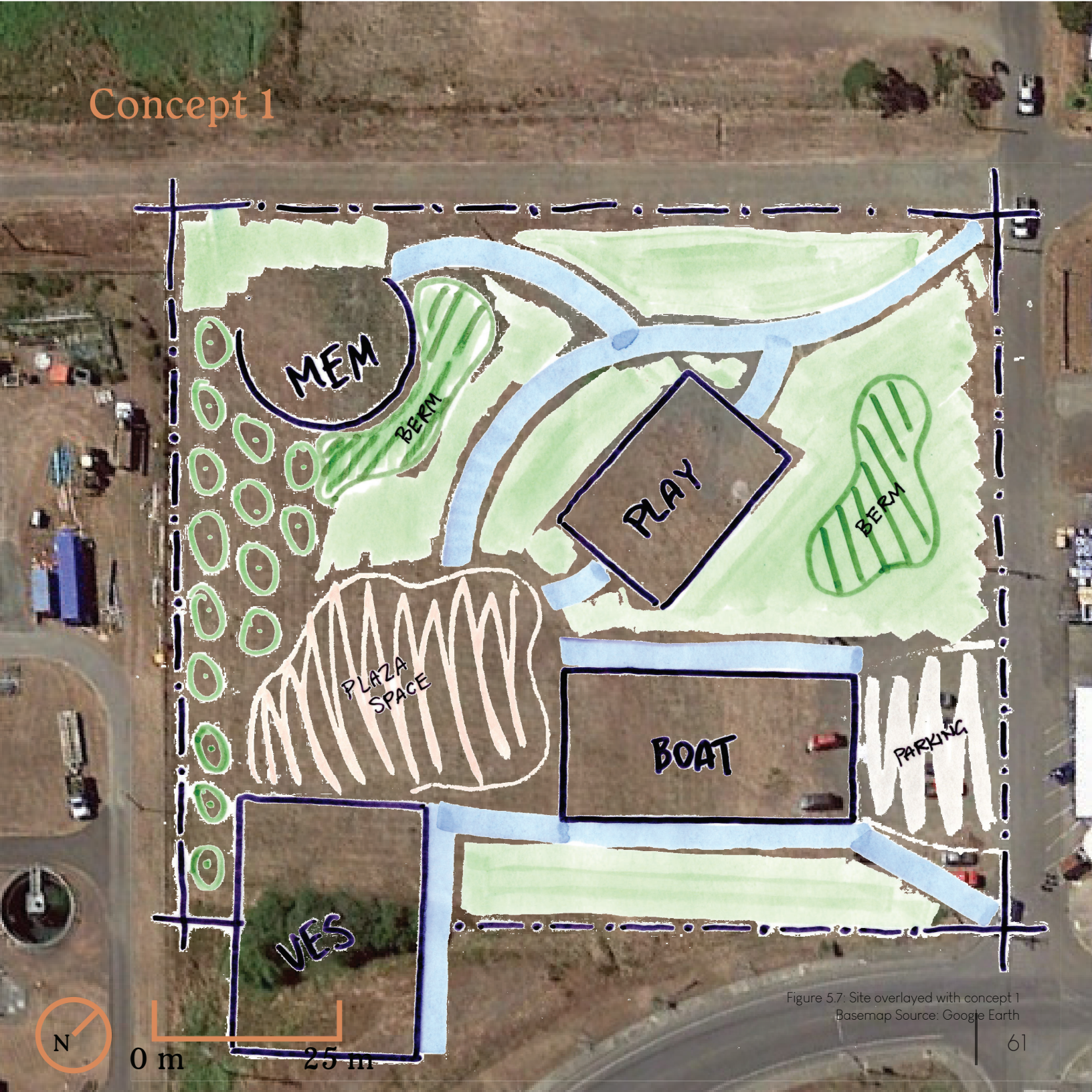

Figure 5.7: Site overlayed with concept 1
Basemap Source: Google Earth

Concept 2

Figure 5.8: Site overlayed with concept 2
Basemap Source: Google Earth

since it lies at the end of Montesano Street, the main street entering the marina, thus increasing familiarity. Berms were laid strategically in order to create more privacy for the park from the street. The boathouse was placed in the southeast corner also for visibility from the main road with a parklot behind it. This resulted in the north half of the site having ample space for a playground, paths, and open space.

The weakness of this layout is that it includes too much unprogrammed space. The northern half of the site felt unengaging and unexciting because there are only pathways there. I considered sprinkling benches along the pathways, but even then, it would not be enough of a draw. Being next to the large open space and state park, it seems foolish to not take an opportunity to program the space as much as possible in order to balance with the large unprogrammed area adjacent to the site. Additionally, the plaza space is very far from the entrances to the park, making it less inviting for visitors. It would also make vendor access to the plaza more difficult during events.

Concept 2 (Figure 5.8) was rather different from Concept 1. The VES has been removed from the right-of-way and placed into the southeast corner. This maintains visibility of the VES, but places it closer to the road improving accessibility. The boathouse has been moved into the northeast corner creating an entrance from the intersection of Harms Street and Harbor Avenue. Harbor Avenue is a quieter, slower street, which makes it more enticing for pedestrian activity whereas Monetsano Street is much busier, discouraging pedestrian use even though it has a sidewalk when Harbor does not. By placing the more attractive structure at the intersection that provides a nicer pedestrian experience, it creates a more inviting entrance further encouraging pedestrianization of Harbor Ave. Additionally, there are parking areas as requested, but they are separated from the main park area by the angle of the two largest structures on site. Lastly, the plaza is large and very centrally located improving overall site flow as well as accessibility.

Weaknesses of this current layout include perhaps too much parking space utilizing land that could easily be something of more benefit to the park design. Also, the plaza may be too large, especially if it is hardscape creating too much runoff. Lastly, the playground is a bit haphazardly placed on site without much regard to its form or location as well. How could the form of the playground be thought differently in order to create a better flow within the park?

Concept 3 (Figure 5.9) did not change much from option 2 because the location of the boathouse on the intersection of Harbor Street and Harms Street seemed strong enough to remain. In this iteration, the

playground and VES were swapped in their location in order to ensure the highest visibility of the VES possible. With its location in the southeast corner of the site, it is also visible the entire time people are driving north on Montesano Street toward the marina, which is a popular driving route. There would never be any question about where the boathouse is located. However, being farther from the road would again limit accessibility. Furthermore, having the playground near the busiest intersection of the site does not seem conducive to enjoyment or safety by users.

FINAL DESIGN

When these three options were presented to the city, they made it clear they liked Concept 2 the best. While they had originally encouraged me to explore designing for the right-of-way, they said the laws and codes for developing a right-of-way are different than for an open space, and would make pursuing this option more complex than it was worth. They appreciated the VES in the southeast corner not only for accessibility, but also because that location would provide their favorite views of the ocean from the structure. They also felt the parking implementation was good, but suggested having it simply around the perimeter of the site, an obvious idea that I did not think of sooner. The memorial's location in the northwest corner for integration with the open space made sense, but they challenged the form of it by suggesting a meandering path rather than a single, solitary location. The entry threshold between the boathouse and VES also received positive feedback. Lastly, they encouraged thinking about stormwater management to build off the existing drainage on the site, which had not yet been considered. Additional feedback from peers included commentary on the lack of consideration for site usage during a tsunami event. The park's everyday use had been considered, but emergency use had not. Taking all of this into account, a final design proposal was drafted. Each main feature of the site design is discussed in turn and shown graphically in figures 5.10, 5.11, and 5.12.

The Boathouse + VES

The VES and boathouse are located in the same spot as proposed in layout Option 2 for the reasons explained previously. The intersections, accessibility, and visibility made the most sense for them to be placed in these locations. The boathouse will house two boats that are of significance to coast guard history. They will be able to be brought in and out for events on rails reminiscent of the historic coastguard boathouse and dock depicted in figure 4.13. The boathouse will also have publicly accessible restrooms that will remain open even when the boathouse is not open.

Concept 3

Figure 5.9: Site overlayed with concept 3
Basemap Source: Google Earth


Pla
Playground
Fisherman's
Memorial
N
0 m
20 m

Figure 5.10: Site overlayed with programming
Basemap Source: Google Earth

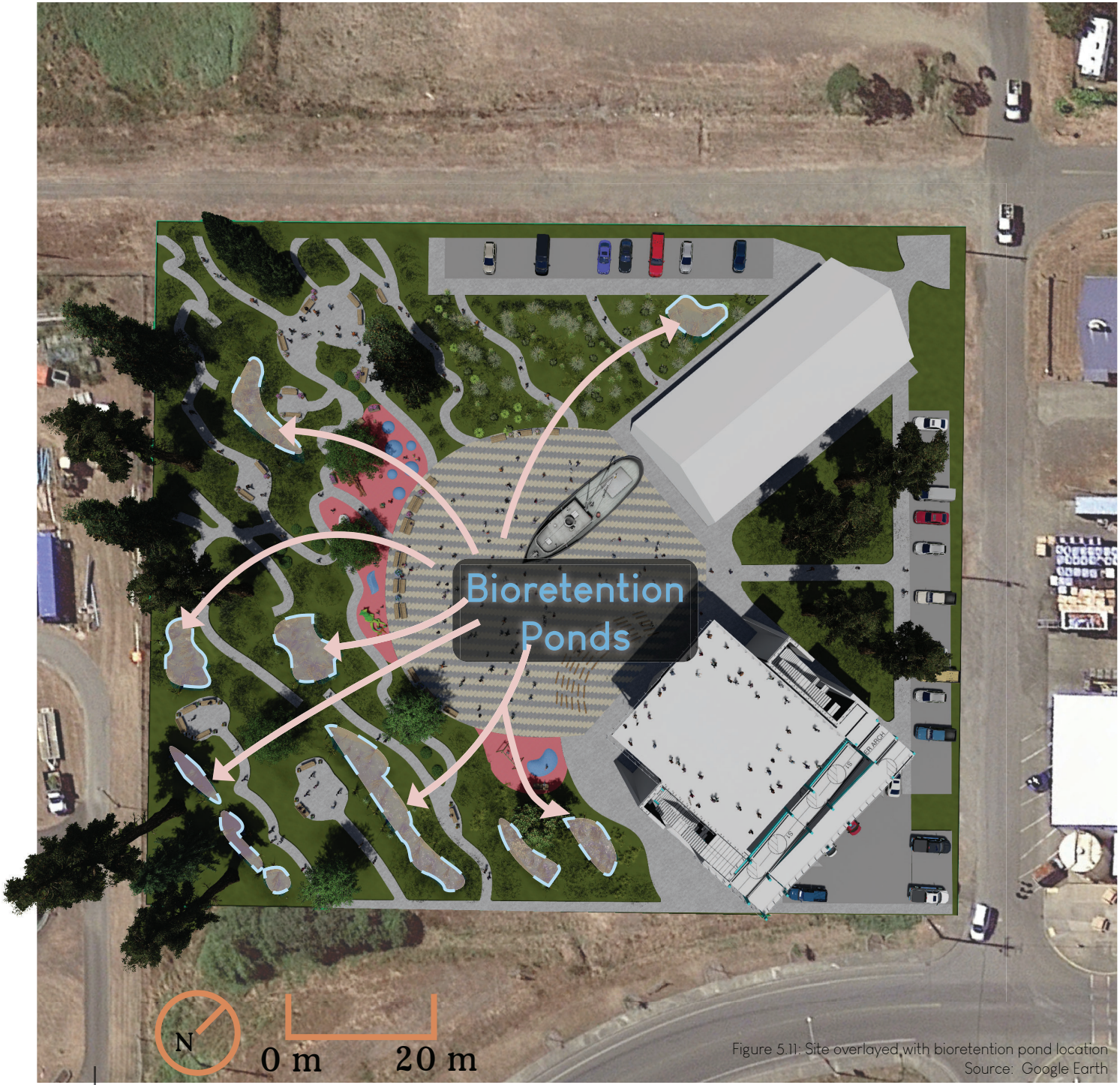

Figure 5.11: Site overlayed with bioretention pond location
Source: Google Earth

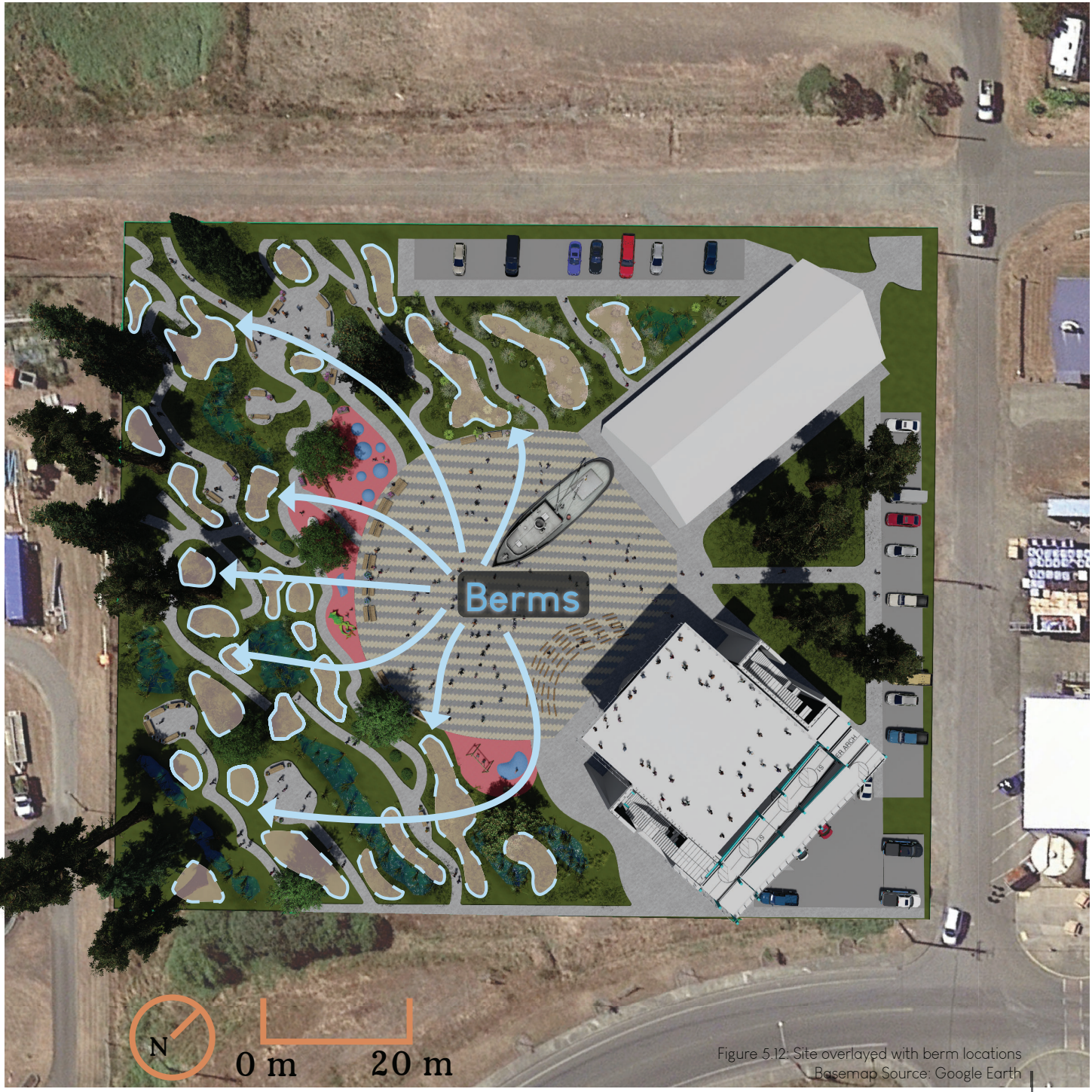

Figure 5.12: Site overlayed with berm locations
Basemap Source: Google Earth

Central Plaza

The central plaza has shrunk from the second option, but it is still large enough to accommodate events. It will have enough space for the boats to be brought out, audience seating around the stage, and areas for vendors to be set up creating a very lively, busy space. The plaza will be made of GeoGrid (see Figure 5.13), a material that allows the ground to be made of natural materials such as gravel or grass and retain its structural integrity when people walk on it or cars drive over it.

Playground

Around the perimeter of the plaza is the playground. It has been broken up into pieces to blur the edges between plaza and playspace. The logic behind this was that it would allow kids to run into the play spaces while their parents continue to meander around the plaza. No one is restricted to spending time in only one space at a time. Grown-ups and kids alike are able to spend time where they want while never feeling separated. Ideally the playground features will be in the shape of boats or other maritime objects relevant to telling the history of Westport's maritime history. The material for the playground will be poured-in-place rubber, a typical playground material, in any color the client wishes (See Figure 5.14).

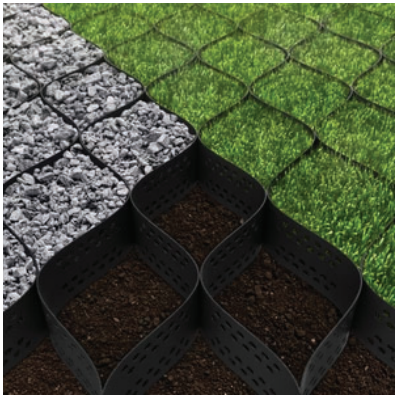

Figure 5.13: A material swatch for GeoGrid
Source: VodaLand

Fisherman's Memorial

The entire west side of the site is devoted to the fisherman's memorial. This is intended to support a main goal of the project, which was to highlight the coast guard history. However, long before any coast guard members showed up in Westport, it was the traditional land of the Chehalis people who are still present in Washington to this day. It became important to acknowledge both of these histories within the site. Chehalis ('te-a-lis') roughly translates to "sand."[2] The form upon which the paths follow is inspired by a pattern found in sand when water has run over it, including on the beaches of Westport. The paths have some throughways as well as dead ends. The throughways are primarily access points for people entering and exiting the site. The dead ends provide areas of reflection, solitude, stillness, and silence that the connecting paths will not. It is in these dead ends where benches will be placed alongside memorials such as plaques for the fallen fisherman.

Figure 5.14: A material swatch for poured-in-place rubber
Source: Surface America

Parking

There is parking around the perimeter of the site that accommodates 37 cars. Harbor Avenue parking extends only half the block in an effort to keep a connection between the open space and the park. There is a small parking lot behind the VES to provide daily use for the crab processing plant across the street, ADA access, as well an area for unloading equipment during events.

Stormwater Management

Throughout the entire site are bioretention ponds that function as on-site stormwater management. These areas will fluctuate between dry and full of water at different times of the year. Ideally they would be integrated into the existing stormwater drainage to the south of the site in the right-of-way. There will be grasses, sedges, and rushes throughout to add foliage and create a more complete ecosystem. Between these ponds, berms will be installed using the soil removed from the construction of the VES. The elevated areas will create a sense of enclosure, privacy, and solitude while meandering on the paths. They will be covered in native plants such as the Pacific Rhododendron that celebrate the local climate.

Planting Palette

With the construction of a new park comes the enjoyable plant selection. Leaning on the work from the thesis of Brook Goodwin which looked at the planting of a forest within Westport as a tsunami mitigation strategy, the plants are mostly natives and ideally planted in abundance.[3] The trees will be sprinkled around the site with the shrubs along the paths to provide a sense of enclosure while meandering the site. There will also be some grasses, sedges, and rushes planted in the bioretention ponds to make the most of the moist environment. It is important to note that this list is just a start to a planting palette. In the event of actual construction, a more exhaustive list would be developed.

Figure 5.15: A perspective of the site displaying the plant diversity.
Source: Author

Figure 5.16: Perspective displaying the playground.
Source: Author

Figure 5.17: Picea sitchensis I Sitka Spruce
Source: Native Plants PNW

Figure 5.18: Acer macrophyllum I Big Leaf Maple
Source: North Carolina Extension Gardener Plant Toolbox

Trees:

- *Picea sitchensis* I Sitka Spruce
- *Tsuga heterophylla* I Western Hemlock
- *Thuja plicata* I Western Red Cedar
- *Acer macrophyllum* I Big Leaf Maple
- *Alnus rubra* I Red Alder

Figure 5.19:Rhododendron macrophyllum I Pacific rhododendron
Source: Author

Figure 5.20: Mahonia aquifolium I Oregon grape
Source: Whidbey Island Conservation District

Shrubs:

- *Vaccinium ovatum* I Evergreen huckleberry
- *Holodiscus discolor* I Oceanspray
- *Mahonia aquifolium* I Oregon grape
- *Gaultheria shallon* I Salal
- *Myrica californica* I Pacific wax myrtle
- *Rubus spectabilis* I Salmonberry
- *Acer circinatum* I Vine Maple
- *Rhododendron macrophyllum* I Pacific rhododendron

Figure 5.21: Polystichum munitum I Sword fern
Source: Easy To Grow Bulbs

Figure 5.23: Elymus mollis I Dunegrass
Source: Native Plant Trust

Figure 5.22: Oxalis oregana I Oregon oxalis
Source: Native Food Nursery

Figure 5.24: Carex stipata I Sawbeak Sedge
Source: Sparrowhawk Native Plants

Understory:

- *Polystichum munitum* I Sword fern
- *Struthiopteris spicant*, syn. *Blechnum spicant* I Deer fern
- *Oxalis oregana* I Oregon oxalis
- *Viola sempervirens* I Evergreen Violet

Grasses/Sedges/Rushes:

- *Elymus mollis* I Dunegrass
- *Phalaris arundinacea* I Reed Canary Grass
- *Carex stipata* I Sawbeak Sedge
- *Carex deweyana* I Dewey's Sedge
- *Juncus falcatus* I Sickle-Leaved Rush
- *Juncus acuminatus* I Tapered Rush

NON-EMERGENCY AND EMERGENCY USE

The non-emergency use of the site was the main determinant of the design, but every aspect was executed through a lens of emergency usage. Conversations with the city made it clear how important it was to contribute new space for community use. The paths and circulation are an excellent example of how the park was designed for both non-emergency and emergency use. Figure 5.25 shows the multiple paths available for accessing the VES if an emergency occurs, but also the throughways and dead ends that were integrated for use in times of non-emergency. Every path entering the site leads to the VES directly and quickly. The paths that dead end and are farther from the VES will not be used if a tsunami arrives. Figures 5.26 and 5.27 display the same perspective when there is and is not a tsunami. Also, figures 5.28 and 5.29 display the site from a plan perspective when there is and is not a tsunami.

Westport's progressive attitude about tsunami disaster preparedness was fully embraced within the design. The weaving together of the VES and a new city park provides an excellent precedent for future planning projects, especially those pertaining to climate adaptation and disaster preparedness regardless of city size. Using ideas of rural design, placemaking, and coastal adaptation all contributed to the final design of the park. To acknowledge the very scary inevitable fate of a place is brave, and Westport deserves praise for their willingness to do so.

The design proposed in this chapter set out to accomplish the goals the city of Westport set forth and combine them with lessons learned while researching rural design and planning, environmental risk and hazard mitigation, and placemaking. In the final chapter, I will reflect on the project as a whole, limitations through the process, and the city of Westport's response to the final design.

Figure 5.25: Site accessibility in emergency and non-emergency times
Basemap Source: Google Earth

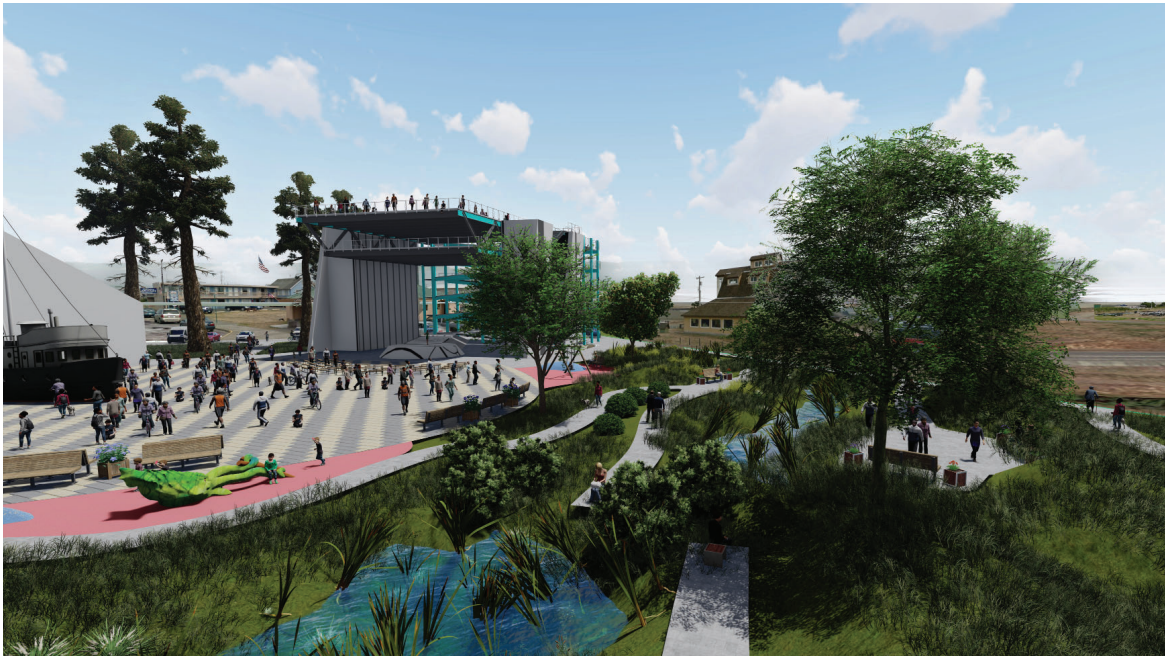

Figure 5.26: Perspective when there is no tsunami. Source: Author

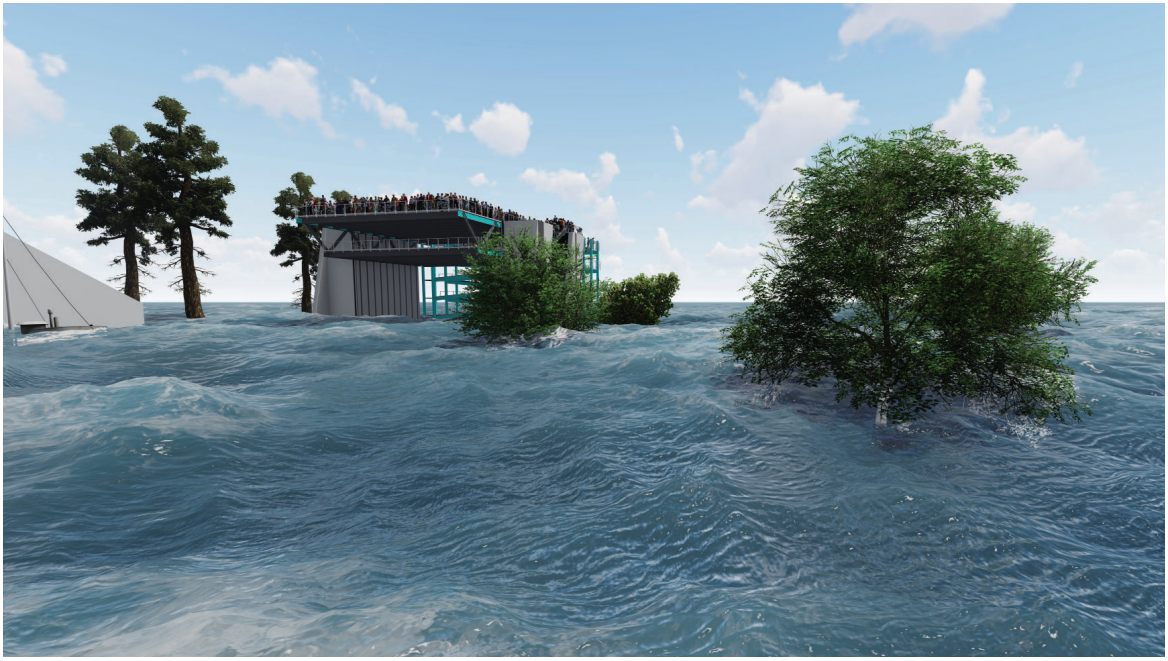

Figure 5.27: Perspective when there is a tsunami. Source: Author

Figure 5.28: Plan when there is no tsunami.
Source: Author

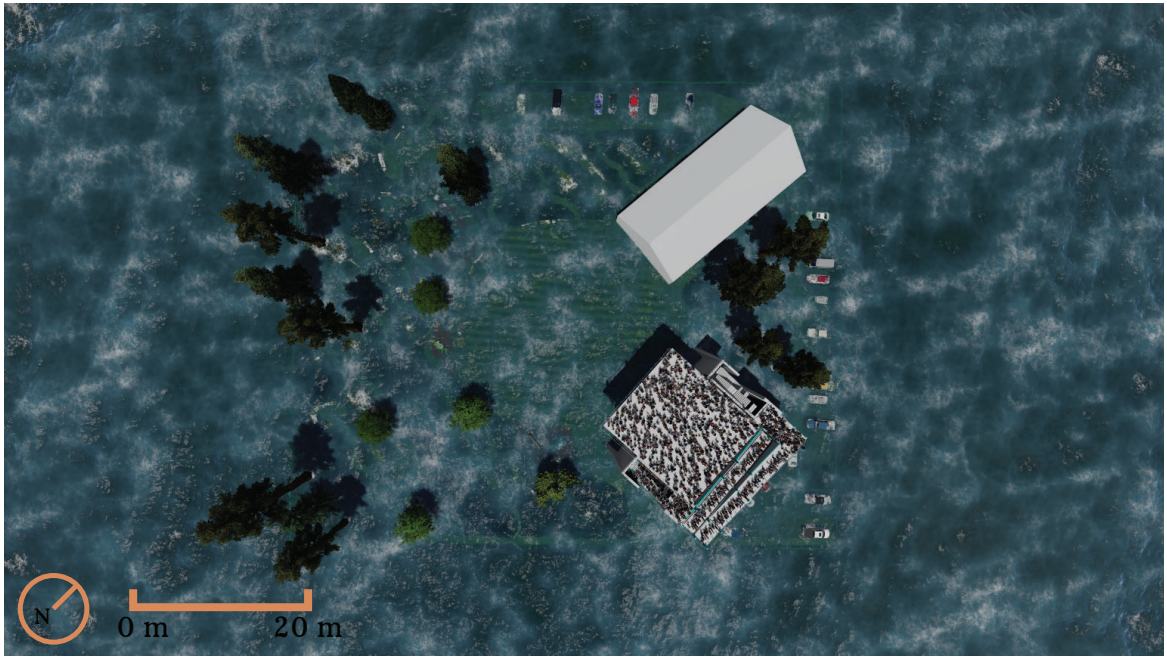

Figure 5.29: Plan when there is tsunami.
Source: Author

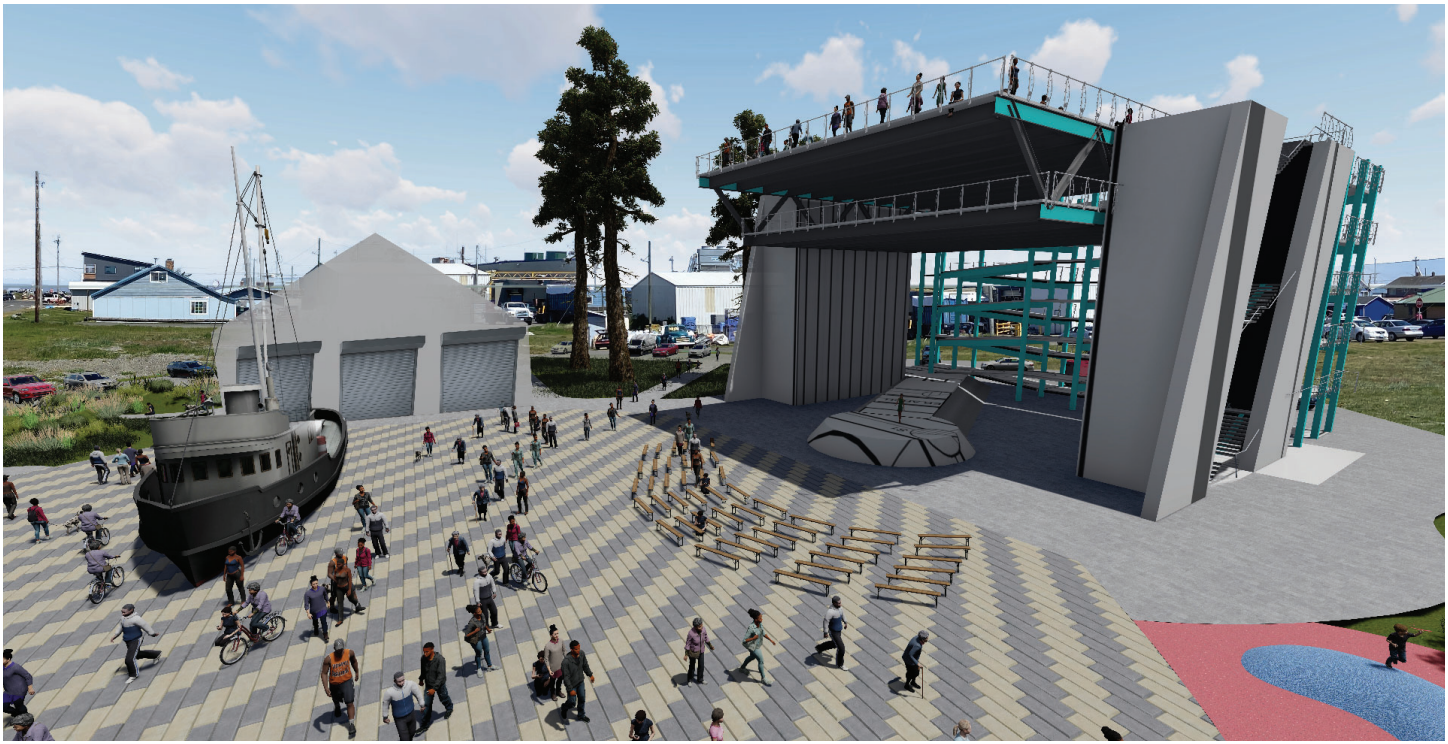

Figure 5.30: A perspective of the site displaying the plaza.
Source: Author

Figure 5.31: Perspective displaying the view from the top platform of the VES
Source: Author

Chapter 5 Endnotes

1. Yuasa, Mark. "Washington Town Highlights Its Salmon Fishing History | The Spokesman-Review." *The Spokesman-Review*, July 10, 2014. https://www.spokesman.com/stories/2014/jul/10/washington-town-highlights-its-salmon-fishing/.
2. Mathews, Bethany K. "Cultural Resources Assessment for the Westport Vertical Evacuation Structure, Westport, Grays Harbor County, WA." Antiquity Consulting, LLC, December 14, 2022.
3. Goodwin, Brook A. "Coastal Forests as a Tsunami Mitigation Measure in Pacific Northwest Coastal Communities." M.U.P., University of Washington, 2022. https://www.proquest.com/docview/2704060800/abstract/1FEF7F0B9A014D95PQ/1.

Chapter 6: Conclusion

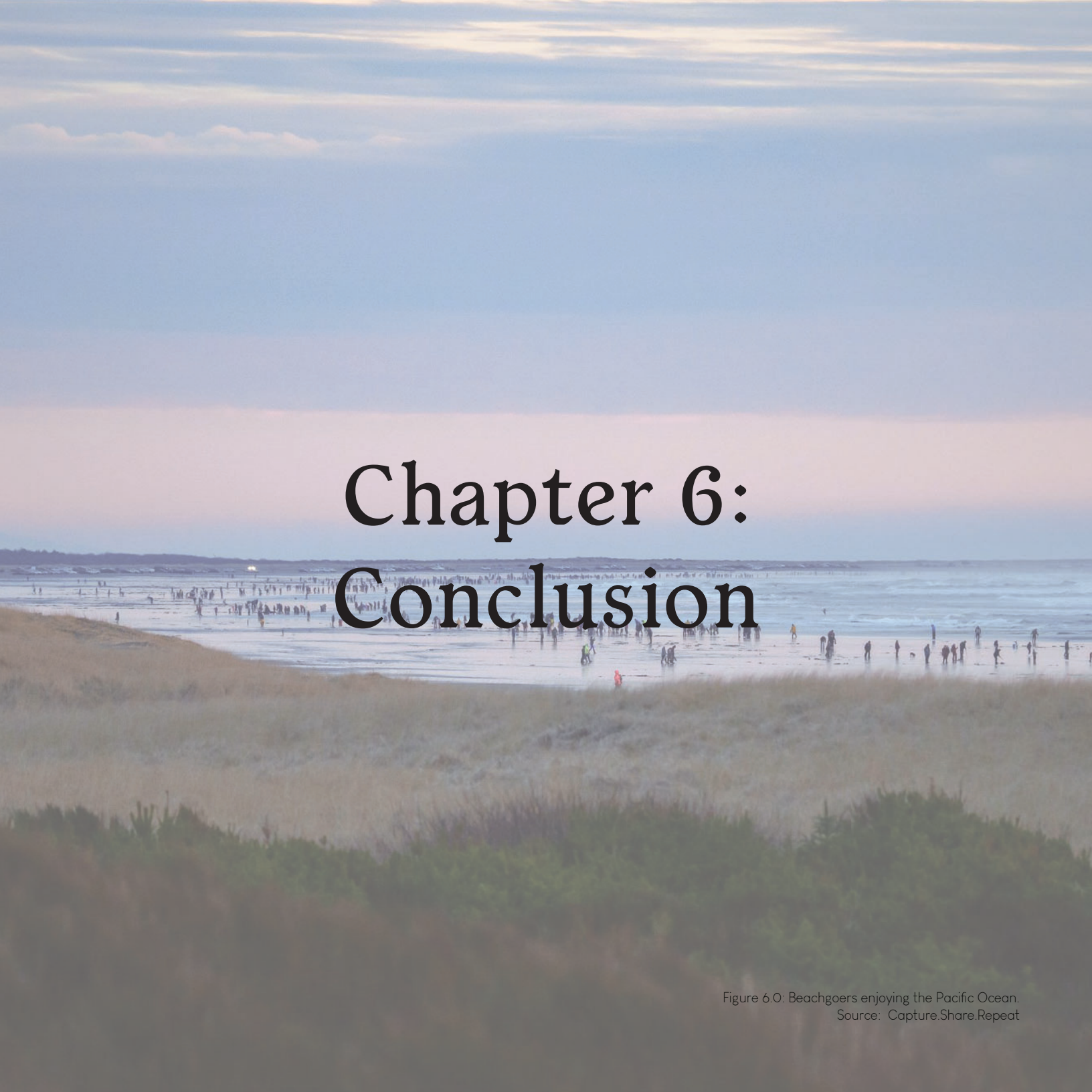

Figure 6.0: Beachgoers enjoying the Pacific Ocean.
Source: Capture.Share.Repeat

This thesis examined the intersection of hazard mitigation, small town design and planning, and placemaking, and brought all these topics together through the design of a park around a tsunami vertical evacuation structure (VES) for the small coastal town of Westport, Washington. Small coastal towns like this are at the forefront of climate change adaptation as they recognize and find ways to respond to risks related to tsunamis and sea level rise. Although we often look for precedents of innovation in planning and design from large cities with many resources, these towns are quietly becoming leaders and models for adaptation and resilience in the face of environmental vulnerability.

Toward the end of this project, on May 12, 2023 I traveled to Westport and sat in the shade of a lighthouse and presented my proposal to Kevin Goodrich, City Administrator, and John Shaw, Executive Director of the Westport Maritime Museum, the town representatives I had been working with for the duration of my project. Overall, the project was very well-received. They felt that the proposed design accomplished the goals they set out for me and contributed some additional perks such as increasing the tree canopy cover and planting native species throughout the site. They voiced an appreciation of my collaboration throughout the process when I asked many questions about the site and greater Westport context. After all was said and done, Kevin requested I present my work to the city council over Zoom, which occurred on May 30, 2023. The feedback during that meeting was that of appreciation around how thoughtful the memorial was. They asked for clarification on the memorial that currently exists asking if it was going to be relocated, but I clarified that it is to be a new iteration of the memorial rather than moving the one that is already there. They also agreed that the VES location provides a very nice view of the water when on top of it.

Project Limitations

Throughout this work, I have waxed poetic about the importance of community engagement. I worked closely with two community members – Kevin Goodrich and John Shaw – from day one of the project, and they have given me extensive amounts of time and knowledge that helped shape my project into what it became. However, due to time and resource constraints, I was unable to involve any additional community members. If I had the capacity to do so, I would have talked to residents from all over the city asking them about Westport and the site, engaged them in an initial charette to brainstorm ideas and learn what they want for their city, and met with them several times throughout the process to garner feedback on iterations as they progressed. I believe this would give my project more validity and to better practice what I was preaching through research when exploring how community engagement fosters empowerment throughout those involved. The lack of community engagement was absolutely the biggest limitation and weakness to this project.

Furthermore, the FEMA application for a new vertical evacuation tower in Westport may limit this project if it were to come to life. The application was submitted in 2019, and much has changed since then. I proposed moving the location of the VES on the site, all of which may result in a new submission for the FEMA grant causing it to possibly take another several years for Westport to receive funding. Additionally, the project site is sitting on two parcels – one owned by the City of Westport and the other owned by the Port of Greys Harbor. The city has not received explicit permission from the Port for construction on their parcel, but they have assured me that should the project go forward, they would seek that permission and likely receive it. Lastly, in an ideal world, it would have been excellent to discuss VES design and construction with people who are more experienced in it, particularly in Japan. Understanding the context of Japanese culture and built environment and what factors influenced the development of Japan's VES network may have contributed to a deeper understanding of how to better integrate the Westport VES and site into the community.

Further Development

Currently in the works is a golf course that will occupy much of the State Park that is near the site. The city has partnered with private developers to construct a golf course. This is not directly next to my site, but it is a valuable piece of context to be aware of in regard to the future development of Westport. Figure 6.1 shows the map of the proposed golf course, with my site outlined in the top right corner under the map key.

Across the street from the VES site is a large swath of land being explored for development. It is privately owned and the developers hired architects and city planners to design a substantial housing community and commercial district on that site and on many others, including the parcels on which my project sits. The proposal that was presented to the Planning Commission on May 16, 2023 would include 341 homes, construct new streets, move the VES and change the shape of it, as well as relocate a path on the beach. The project was also presented and recorded at a city council meeting on May 8, 2023 and is available on Westport's website for viewing. Figure 6.2 shows the plan for this project. It is apparent how dramatically this would shift the landscape for the city of Westport, and the city leaders are aware of that. Currently the proposal is simply an idea in its infancy that could be directed in a multitude of different directions. Only time will tell what comes of it.

Figure 6.1: Gold course development project. Source: Westport Golf Links

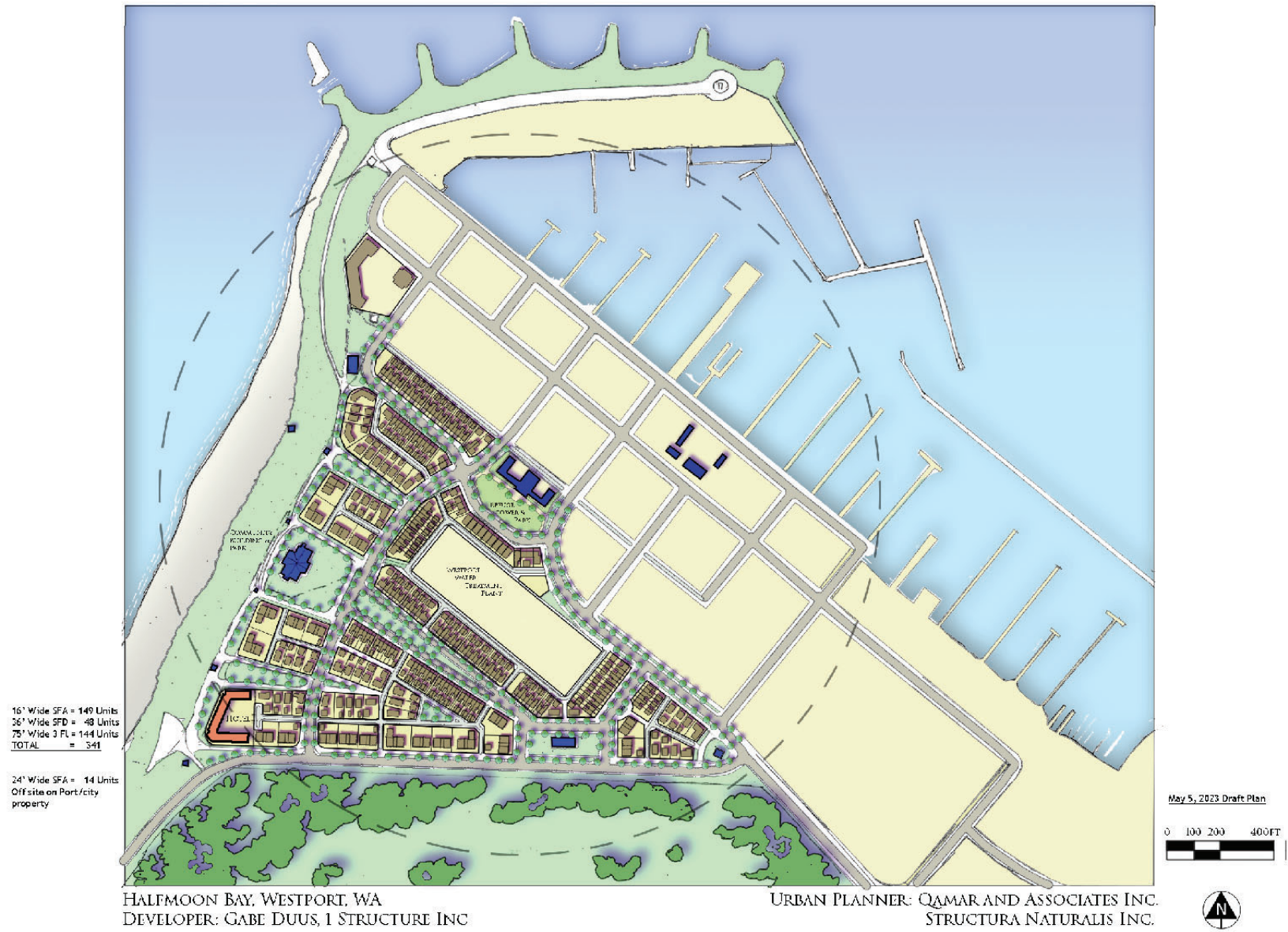

Figure 6.2: Proposal for Westport's marina distrcit.
Source: Qamar and Associates Ind.

Reflection

I started this thesis project interested in looking at rural design and planning because it was so rarely discussed during my education in graduate school, but then expanded into so much more. I never expected to have the chance to work so closely with a small town trying to help them achieve goals and visions they have for their town. It has been a treat learning about the intricacies of small town planning and design. Even though Westport is not at the extreme rural end of the urban-rural spectrum, in that it is an incorporated municipality and it is not sparsely populated or far from basic services, it has provided important lessons pertaining to changes within the municipal fabric, design ethics, and how to balance client wishes with my imagination. Before this project, I already knew of the importance of community outreach, but I did not know how much potential it has to lift up, empower, and contribute to the social capital of a community. I learned real world limitations such as the potential issues of developing within a right-of-way. The work also provided fulfilling experience in translating a client's visions with the design process and ability to iterate until all parties involved were pleased. My adoration of small town planning and design has only been heightened through this work, and I believe in the value of these often forgotten places and their ability to provide unique opportunities and lessons for larger cities. I hope to take this passion for smaller, overlooked places into my career.