Appendix G

Environmental and Cultural Resources

Puyallup River Basin

Flood Risk Management Feasibility Study

Department of the Army
Seattle District, US Army Corps of Engineers

March 2016

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Environmental and Cultural Resources Appendix

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Environmental and Cultural Resources

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Clean Water Act Section 404 Analysis

Puyallup River Basin
Flood Risk Management General Investigation
Feasibility Study

Pierce County, Washington

Prepared by:

Department of the Army
Seattle District, US Army Corps of Engineers
Environmental and Cultural Resources Branch

March 2016 DRAFT

Introduction

The purpose of this document is to record the U.S. Army Corps of Engineers (Corps) compliance evaluation of the proposed actions within the Puyallup River Flood Risk Management General Investigation (Puyallup GI) in Puyallup River Basin (Basin), Washington, pursuant to the Clean Water Act (CWA). Specifically, Section 404 of the CWA requires an evaluation of impacts for work involving discharge of fill material into the waters of the U.S., and evaluation guidance can be found in the CWA 404(b)(1) Guidelines [40 CFR §230.12(a)].

Attachment A provides Corps analysis of compliance with the CWA Section 404(b)(1).

Project Background

The purpose of the Puyallup GI is to identify, evaluate and recommend to decision-makers an appropriate, coordinated, implementable solution to the identified flood risk problems and opportunities in the Basin. The recommended plan must accomplish flood risk management within the Basin, be technically viable, economically sound; and be supported by local jurisdictions and the non-Federal sponsor of the Study. This report, the draft Puyallup River General Investigation Feasibility Report and Environmental Impact Statement (DFR/EIS), documents the alternatives formulation process and the National Environmental Policy Act (NEPA) evaluation of alternatives associated with this study.

The Basin encompasses approximately 1,000 square miles (Figure 1). It empties into the Puget Sound by means of the Puyallup River and its main tributaries, the White River and Carbon River. Communities within the area include Tacoma, Puyallup, Fife, Sumner, Orting, and Auburn. The Puyallup Tribe of Indians and the Muckleshoot Indian Tribe are also within the Basin. Land use in the Basin varies from forest and crop lands to industrial, commercial, and residential areas.

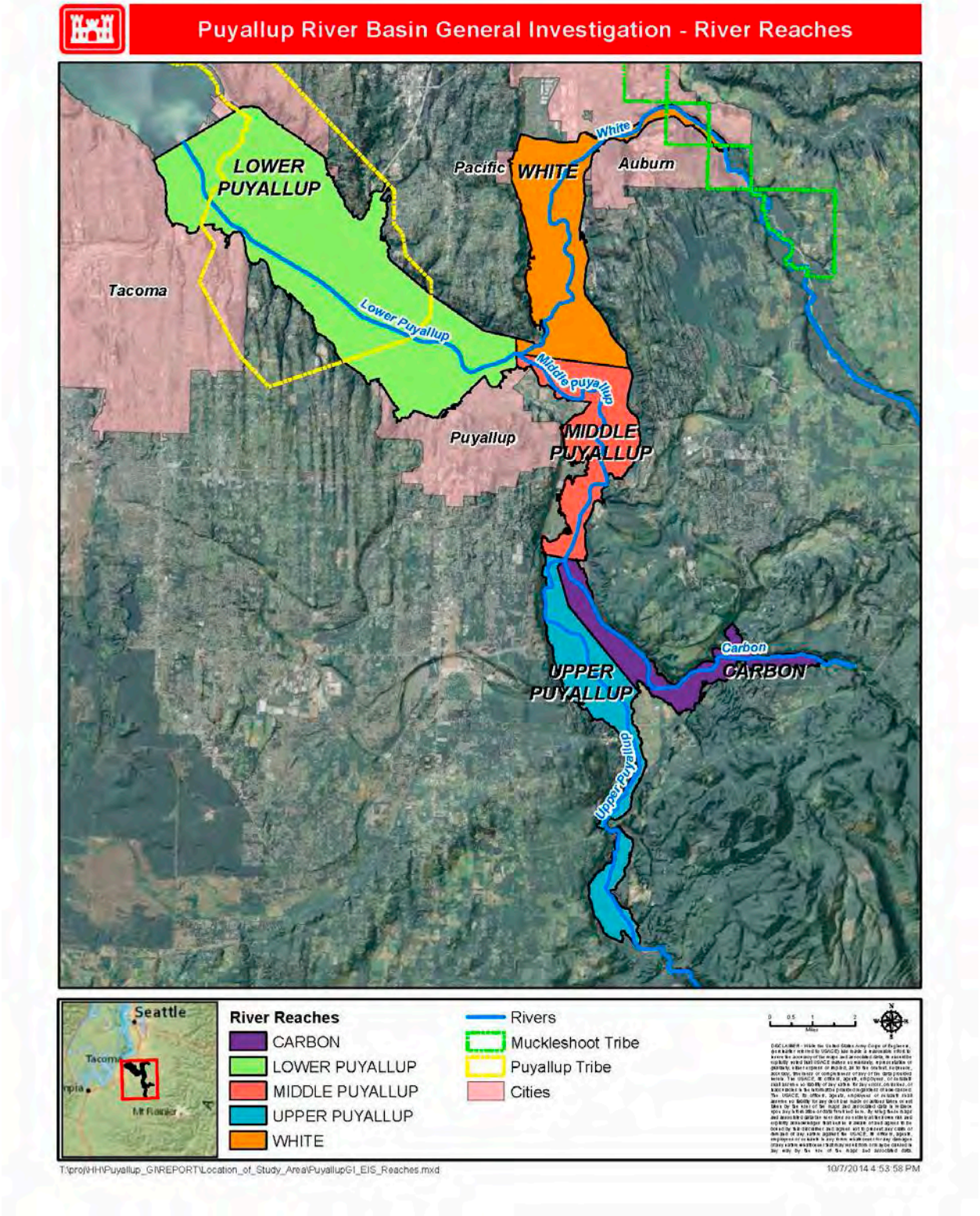

Figure 1: Puyallup River Basin

Project Purpose and Need

The purpose of the Federal action is to reduce flood risks, life safety threats and damages in the Puyallup River Basin as a result of flooding. The action is needed because the Basin experiences frequent flooding resulting in damages to both rural and urban areas throughout the Basin.

Proposed Action and Alternatives

Preliminary evaluations on multiple alternatives were performed and three final alternatives were proposed: the No Action Alternative, Levee Modifications Alternative, and the Levee Modifications and Sediment Management Alternative.

1. No Action Alternative: This alternative would leave the levee system in its current condition and make no attempt to improve flood protection. The No Action Alternative was considered but not pursued due to the potential of unacceptable flood damage to property and life in the watershed. This alternative will not be discussed further in this document. The following are assumptions used in defining the No Action Alternative:

- The current land use and zoning maps for King County and Pierce County will be followed and all areas marked for development will be developed.
- Some channel improvements will be made over the period of analysis to help alleviate flooding.
- Water runoff will increase in speed and volume than previously due to development.
- Not all areas will develop equally; some areas will develop to a much higher density than modeled while others will not develop at all.
- Topography, physiography, and soils will remain relatively unchanged for the near future.
- Development within the floodplain will comply with FEMA regulations. No new buildings will be placed in the 1/100 ACE per FEMA regulations.

2. Levee Modifications Alternative (Figure 2): This alternative will modify the existing levee system to manage flood risk by setting back levees, increasing levee heights, improving levee reliability and building new levees. The proposed levee modifications will be the primary flood protection feature within this alternative and will work with other flood risk management features to increase channel capacity and reduce flood risk within the project area. Proposed modifications in the Basin under this alternative are shown in Table 1.

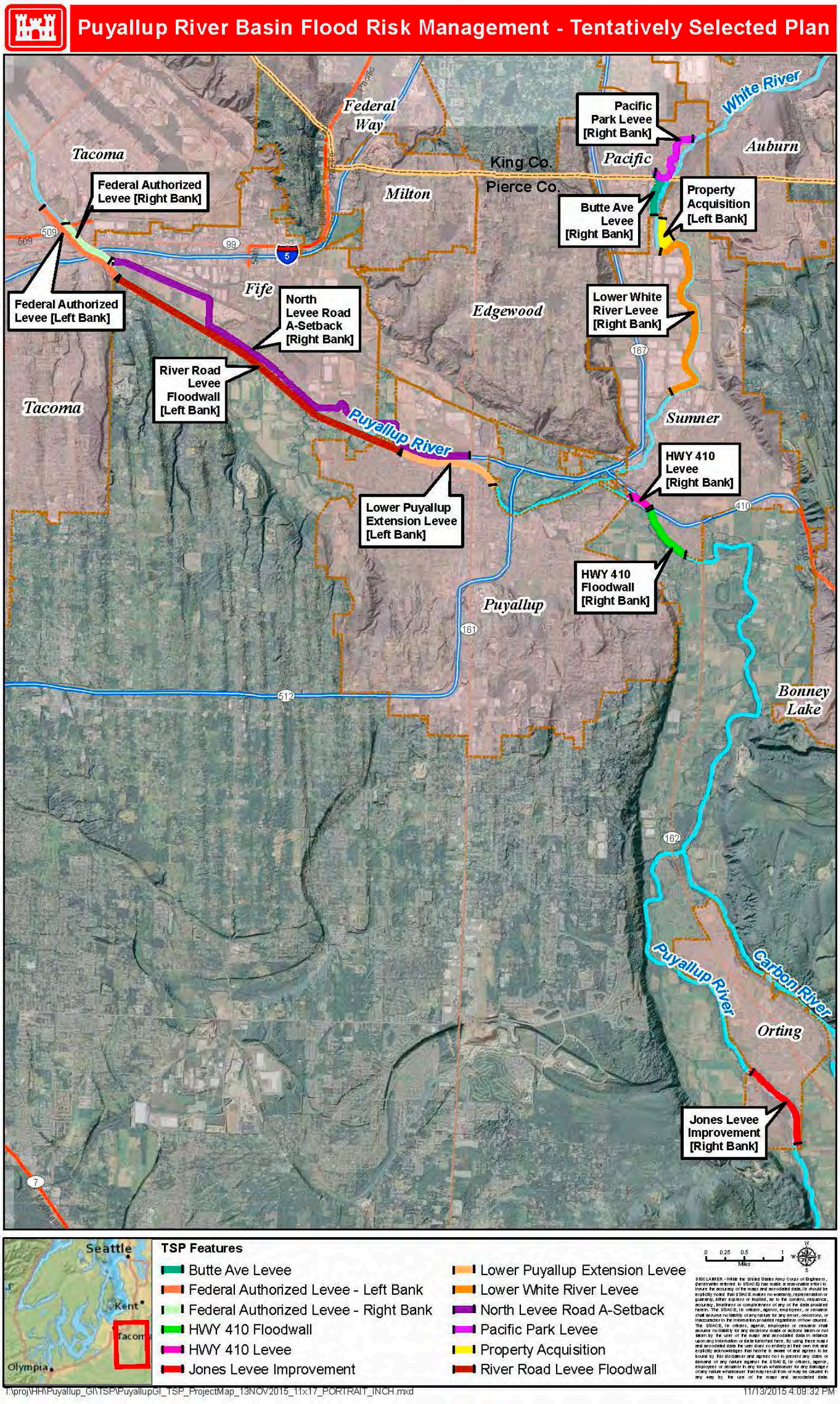

Figure 2: Levee Modifications Alternative

Table 1: Descriptions of the Levee Modifications Alternative

Reach	Feature	Approximate Location[1]	Federal Levee?	New Feature or Modification	Notes
Lower Puyallup (RM 0.0 – RM 10.3)	Federal Authorized Levee	Left bank and right bank: 2.1 miles total. • Right bank 0.7 mi from RM 2.0 to 2.7; • Left bank 1.4 mi from RM 1.5 to 2.9.	Yes	Modification	FAL location is RM 0.7 to RM 2.7 on right bank and RM 0.7 to RM 2.9 on left bank. TSP would raise levees in place on both banks.
	North Levee Road A-Setback	Right bank: 5.4 miles. Setback from RM 2.7 to end of North Levee Road at RM 8.1.	No	Modification	Levee would be setback from RM 2.7 to RM 4.2 (Frank Albert Road) approximately 1,000 ft, from RM 4.2 to RM 6.0 approximately 80-100 ft, from RM 6.0 to RM 7.1 approximately 600 ft, and from RM 7.1 to RM 8.1 approximately 80-100 ft. The setback levee alignment is approximately 32,000 linear feet with approximate levee heights ranging from 6 to15 feet. This feature proposes to setback and raise the levee to safely convey the 1% ACE elevation plus three feet of freeboard. The proposed levee modification would manage flood risks to residential, commercial and industrial properties.
	River Road Levee Floodwall	Left bank: 4.3 miles (RM 2.9 to RM 7.2).	No	New	This floodwall would reduce risks to the transportation corridor and residential, commercial and industrial structures, where space is limited. The floodwall height would range from 4-8 feet, with the average of about 6 feet.
	Lower Puyallup	Left bank: 1.4 miles (RM 7.2 to RM 8.6).	No	New	The new extension levee would be 7,200 feet and would incorporate about 1,100 feet of the existing River Road Levee.

[1] All river miles are estimates at the concept level for this DFR/EIS. River mile locations will be refined during feasibility-level design analysis and documented in the final FR/EIS.

	Extension Levee				The levee height would vary between 8-13 feet. In areas where the levee is 8 feet tall, there would be about 3.5 feet of additional fill placed on the existing berm.
Middle Puyallup (RM 10.3 – RM 17.4)	State Route 410 Levee/Floodwall	Left bank: 1.1 miles (Levee section between RM 10.7 and 11.0; floodwall between RM 11.0 and 11.8).	No	New	Combination of new levee and floodwall; would provide protection to adjacent SR 410 and residential properties. Levee and floodwall height would vary between 6-12 feet to provide 3 feet of freeboard from the 1% ACE flood elevation.
Upper Puyallup - (RM 17.4 – RM 28.6)	Jones Levee Improvement	Right bank: 1.2 miles (RM 21.3 to RM 22.5).	No	Modification	Modification to levee in place; would increase levee heights approximately 1.5 feet to 6.5 feet and improve riverside erosion protection; would also include a flow control structure design as a preventative measure that would reduce repetitive erosion damage to the Ford Levee.
White River (Puyallup River RM 10.3 / White River RM 0.0 to RM 29.6)	Pacific Park Levee	Right bank: 1.0 miles (RM 5.5 to 6.5)	No	New	New levee; would provide protection to adjacent commercial and residential properties. Levee would vary between 7-10 feet to provide 3 feet of freeboard from the 1% ACE flood elevation.
	Butte Ave. Levee	Right bank: 0.7 Miles (RM 4.8 to RM 5.5)	No	New	New levee; would provide protection to adjacent commercial and residential properties. Levee would vary between 1-8 feet to provide 3 feet of freeboard from the 1% ACE flood elevation.
	Lower White River Levee	Right bank: 2.7 miles (RM 1.7 to RM 4.4)	No	New	New levee; would provide protection to adjacent commercial and residential properties. Levee would vary between 4-13

					feet to provide 3 feet of freeboard from the 1% ACE flood elevation.
	Property Acquisition	Left bank: RM 4.6 to RM 5.0	NA	New	This non-structural measure proposes acquiring approximately 35 acres of property, consisting of 14 parcels that have experienced repetitive flood impacts and are at risk to additional adverse flood impacts.
Approximate Total miles new construction:	**11.2**				
Approximate Total miles modification to existing features:	**8.7**				

3. Sediment Management and Levee Modifications Alternative: The intent of this alternative is to manage sediment and its effects by mainstem dredging as a primary feature to manage flood risks in the Basin. Dredging will be utilized in conjunction with new levees and levee improvements to manage flood risks that the dredging component could not provide alone. The Lower Puyallup and Lower White Rivers are expected to be dredged once during the period of analysis while the White River near Pacific would be dredged three times and the Upper Puyallup River would be dredged twice. The sediment management and levee modifications measures will work with other flood risks management measures to increase channel capacity and reduce flood risks within the project area.

Alternative Elimination and Preferred Alternative

Alternative 3 largely includes similar lengths and methods of levee construction and modification as Alternative 2. However, the removal of the setback from this alternative increases levee modification at the riverbank over Alternative 2: 10.5 miles for Alternative 3 and 4.5 miles for Alternative 2. With Alternative 3, the proposed dredging would dredge the Lower Puyallup River for approximately 4 miles, the Lower White River for ~2 miles, the White near the town of Pacific for ~1miles, and the upper Puyallup River for ~1 miles. This action will cause considerable short-term detrimental effects to the channel substrate. Such an action will not occur without severely impacting fish, insects, benthic macroinverebrates, and aquatic habitat. Areas outlined for dredging include spawning habitat for chum, pink and Chinook. Natural processes will eventually return the river bottom to natural norms after 1 or 2 years. However, dredging damage will reoccur after each repeated maintenance dredging over the lifetime of the project. The maintenance dredging will severely limit the river from a full recovery.

Alternative 3 is predicted to cause aquatic damage beyond acceptable levels even with mitigation. Therefore, Alternative 2 is the Preferred Alternative and will be the main focus of this analysis.

Potentially Adverse Effects (Individually and Cumulatively) on the Aquatic Environment

Effects on Physical, Chemical, or Biological Characteristics of the Aquatic Ecosystem

Direct The preferred action will add fill to wetlands and waterways with improvements to existing levees and the construction of new levees and floodwalls. Proposed levee modification work will continue to harden the shoreline. Due to the increase level of flood protection, flood waters will remain in the channel increasing water surface elevations and velocities. Acquisition of property by the Corps could protect the shoreline from further development.

Indirect Altered site hydrology from new or modified flood control structures could destroy wetlands or create conditions for new ones to develop. The natural ability for wetlands to remove and hold pollutants from water will likely be reduced temporarily until more develop. Localized temperatures within waterways may increase from riprap retaining heat from the environment. New levees and floodwalls will further restrict the size of riparian habitat available along the shoreline and remove shade providing vegetation while improvements to existing levees would maintain the status quo. The land acquired by the Corps may return to riparian or wetland habitat in the absence of human development and facilitate channel migration and diversity.

Cumulative The potential cumulative impacts from the Preferred Alternative have been assessed in detail by resource in Chapter 4 of the EIS. Nearly all potentially significant impacts from the action can be reduced to less than significant levels by mitigation measures specified in this EIS. At point in the study, mitigation measures are conceptual. As design is refined at later stages of the study, the mitigation measures will also be refined.

However, it should be noted that the population within the Basin is projected to grow within the next decade. This growth will most likely increase the pressure on the aquatic environment. Water quality, including temperatures and pollutants, will likely worsen. Populations of aquatic species such as the chum, pink and Chinook could degrade with the effects of population growth.

Effects on Recreational, Aesthetic, Historical, and Economic Values

Recreational and aesthetic impacts will be minimal in the long term. Aquatic recreation will not be affected. Impacts to historical sites are unknown at this time, including tribal fishing areas. In accordance with the National Historic Preservation Act (16 USC 470), historic properties will be investigated and proper measures taken in accordance with State and Federal law. Acquisition of private property by the Corps could result in some economic loss; however would offset by the flood protection provided to the surrounding area. The proposed project is expected increase levels of protection to urban areas, business, and industrial activity, and the stability of employment in the region.

Findings

Alternative 2 is the least environmentally damaging practicable alternative. Under this plan, the proposed action is not exempt from Section 404 of the CWA due to change in surface profiles, materials and rock size below Ordinary High Water (OHW) and/or wetland fill activities. Due to these impacts an Environmental Impact Statement has been prepared. At this point in the study, conceptual level of design has been developed for this alternative. This alternative will be refined and more fully developed during future design phases. An Environmental Impact Statement has been prepared.

All Appropriate and Practicable Measures to Minimize Potential Harm to the Aquatic Ecosystem

Impact Avoidance Measures

Two alternatives were evaluated in order to select the best action for minimizing cost and impact to the environment while fully restoring flood protection. Alternative 2 was chosen because it minimizes the negative impact on the environment and by avoiding dredging activities. The plan will provide flood protection to the Basin and include compensatory mitigation for unavoidable impacts, as needed.

Several avoidance measures are included in the design. These include: limiting expansion of the levee to the landward side whenever possible to avoid encroaching on the river; limiting the footprint of the project to the minimum needed; completing surveys of wetlands, cultural resources, important nesting sites, and other sensitive areas prior to final design to avoid impacts; and building a setback levee.

Impact Minimization Measures

In accordance with Corps policy, minimization of ecosystem, cultural, and socio-economic impacts is a significant project consideration [ER 1105-2-100]. The Corps will take all practicable steps during construction of the project to minimize impacts to these resources. Contingencies will be in place if any of the water quality protection measures fail to achieve their intended function. The Corps will observe all construction windows to ensure that impacts to sensitive species will be avoided or minimized, to include listed salmonids and bald eagles.

The minimization measures include:

- Project design will incorporate planting of appropriate riparian native species riverward of the proposed levee work to provide riparian habitat and initiate re-establishment of native species;
- The final footprint will be guided by resources surveys to minimize impacts to wetlands, nesting habitat, cultural resources, etc
- Best management practices (BMPs), such as storm water runoff prevention, will be used to ensure that no unnecessary damage to the environment occurs;
- Proposed in-water work will be accomplished only during the approved in-water work windows and monitored to meet turbidity standards;
- Only clean rock will be placed on the riverward side of the levee.
- There will be no end dumping of material into the river. Riprap will be individually placed; quarry spalls will be placed in small quantities from the bucket of an excavator;
- Vegetation removal will be limited to the minimum extent possible;
- A detailed Operation and Maintenance Plan will be written that will clearly define the footprint and essential elements of the flood control work to help limit future repairs and maintenance activities. Examples include where vegetation removal and armoring activities are and are not needed; and
- An Environmental Protection Plan will be established to define all BMPs and establish a monitoring and reporting protocol.

Compensatory Mitigation Measures

As discussed above, mitigation has been considered to counter the unavoidable impacts of the preferred alternative. Unavoidable impacts include loss of wetlands, riparian habitat, large woody debris, and hardening of surfaces. Mitigation may be conducted onsite or offsite. All mitigation sites will be designed to restore habitat loss (i.e. salmon rearing habitat, riverine wetlands, riparian habitat, side channel refuge and rearing habitat) that historically existed within the Basin. The Corps will mitigate on or near impacted sites within the Basins reach. Mitigation efforts will need to replace the habitat that was lost during construction. With mitigation implemented there will be no net loss of habitat as a result from the preferred alternative. Cultural resource mitigation efforts will also be initiated if any unavoidable impacts to historical sites or properties occur.

Findings

Avoidance, minimization, and mitigation measures are conceptual at this stage. Further development will be made during the 35% design phase outlining specific measures. The Corps has determined that all appropriate and practicable measures will be taken to minimize potential harm to the environment.

Other Factors in the Public Interest

Conservation

The action is unlikely to adversely affect conservation efforts that are completed or ongoing. This project has no net benefits to the environment. Compensatory environmental features are proposed through multiple design additions. Conservation measures will be designed to balance the impacts of the completed project.

Economics

The action will provide better flood protection to residents and businesses in the surrounding communities while also generating jobs and revenue from construction for the local economy.

Aesthetics

The action may alter views to the river through areas of new levees and floodwalls, however, these features are proposed in areas where human-made visual elements are prominent and infrastructure has already modified the landscape.

General Environmental Concerns

The action is unlikely to adversely affect any general environmental concerns expressed by the public.

Wetlands

Wetlands will likely be damaged or destroyed in the proposed project. Conditions may arise in areas conducive to the development of wetlands. Mitigation will occur to replace lost wetlands either onsite or offsite.

Historic Properties

Existing historical and cultural resources within the action footprint are unknown at this time. However, surveys will be done prior to any work to asses, avoid, or mitigate damage done to these resources.

Fish and Wildlife Values

The Corps has coordinated the General Investigation study with local Native American Tribes and State and Federal resource agencies to minimize impacts to fish and wildlife resources. The Corps will submit a Biological Assessment (BA) for the proposed project to the National Marine and Fisheries Service (NMFS) and the Fish and Wildlife Service (USFWS) for review of compliance under Section 7 of the Endangered Species Act.

Flood Hazards

The finished project will improve flood protection around the Basin by increasing flood capacity.

Floodplain Values

The action will minimally change the floodplain capacity in the area because the new levees and modifications to existing levees such as raising the height would cut off the floodplain from the river up to the 1% ACE event.

Land Use

The action will most likely not alter land use in commercial, recreational, and agricultural areas where new levees are proposed due to existing zoning and shoreline regulations. It will protect current land use behind levees from flood damage.

Navigation

The action will not adversely affect navigation within the Basin.

Shore Erosion and Accretion

The action may result in increased accretion and shore erosion during normal and high flows.

Recreation

The action is unlikely to adversely affect recreational uses within the project footprint.

Water Supply and Conservation

The action is unlikely to adversely affect water supply and conservation.

Water Quality

This project will not violate the State water quality standards found at WAC 173-201A. To ensure that exceedances do not occur during construction, turbidity monitoring will be coordinated as part of the Clean Water Act Section 401 consultation with WDOE. Any turbidity effects resulting from the proposed action are expected to be temporary and limited to the area around and within a short distance downstream of the source.

Energy Needs

The action is unlikely to adversely affect energy needs

Safety

The action will be subject to Federal safety laws and regulations. Therefore, the action is unlikely to adversely affect safety within the project footprint.

Food and Fiber Production

The action will remove some agriculture land from food or fiber production for the proposed levees. However, this area will be small and confined to the levee footprint. Therefore, the action is unlikely to adversely affect food and fiber production.

Mineral Needs

The action is unlikely to adversely affect the needs of mineral resources.

Considerations of Property Ownership

The action will comply with 33 CFR 320.4(g) and is unlikely to adversely affect considerations of property ownership.

Needs and Welfare of the People

The action will fulfill the need for protection against flooding that threatens the communities in the project area. However, the action could damage salmon populations utilized by the Tribes.

Conclusion

The Corps finds that this project is within the public's interest and complies with the substantive elements of Section 404 of the Clean Water Act.

Attachment A

Clean Water Act 404(b)(1) Evaluation [40 CFR §230]

404(b)(1) Evaluation [40 CFR §230]

Potential Impacts on Physical and Chemical Characteristics [Subpart C]:

1. **Substrate [230.20]**

   The proposed action is not expected to significantly alter present sedimentation patterns.. Substrate composition along the shoreline will change with the addition of armoring for new levees and floodwalls. The action is unlikely to adversely affect the substrate.

2. **Suspended particulates/turbidity [230.21]**

   Minimal turbidity is expected during construction based on previous project experiences. Any in-water work will involve individually placed clean rocks with no uncontrolled dumping. Best management practices (BMPs) for sediment control will be used throughout construction to minimize any potential turbidity issues. The action is unlikely to adversely affect suspended particulates/turbidity.

3. **Water [230.22]**

   The project is not expected to add any nutrients to the water that could affect the clarity, color, odor, or aesthetic value of the water. It could reduce the suitability of the Basin for aquatic organisms if placement impacts wetlands that have water quality and habitat functions. These impacts will be offset onsite or offsite.

4. **Current patterns and water circulation [230.23]**

   Local flows within the immediate area of new levees may become altered within the immediate area. The existing levees with modifications, most likely, would not alter the local flows during normal flows; however during flood flows, the floodwaters would remain within the channel, potentially altering local water patterns and circulation. With the only levee setback in the project, North Levee Road on the lower Puyallup River, high flows in the river will be able to access the floodplain area at a 0.5% to 0.2% ACE event. A hydraulic engineer will assist with the designs of the project to minimize disturbance. The Corps expects no disruption of current patterns and water circulation during or after construction on normal flows.

5. **Normal water fluctuations [230.24]**

   Water height during normal flows is not expected to change. However, during flood flows, the proposed higher levees would contain more floodwaters within the channel, thereby increasing water surface elevations. Channel migration may occur in the reach of the setbacked levee butis not likely due to the retention of the concrete slab bank protection on the Lower Puyallup. The action is unlikely to adversely affect normal water fluctuations.

6. **Salinity gradients [230.25]**

   The action is unlikely to adversely affect salinity gradients.

Potential Impacts on Biological Characteristics of the Aquatic Ecosystem [Subpart D]:

1. Threatened and endangered species [230.30]

The Corps will prepare a Biological Assessment (BA) for this project and submit it to the National Marine and Fisheries Service (NMFS) and the Fish and Wildlife Service (USFWS) to ensure compliance with the Endangered Species Act (ESA). The BA will include a mitigation plan to offset project impacts ESA listed species. The Corps anticipates receiving a Biological Opinions from NMFS and USFWS covering the listed species affected by the project by the Final Environmental Impact Statement.

2. Fish, crustaceans, mollusks, and other aquatic organisms in the food web [230.31]

Removal of riparian vegetation will have a negative impact on habitat for all salmonid species as it decreases organic inputs and simplifies the shoreline. The conversion of the riverside substrate to riprap in some areas may cause descaling of juvenile salmonids during high river flows and will change the types of crustaceans, mollusks, and other aquatic organisms that use the site. The proposed action will likely adversely affect aquatic organisms. Avoidance measures and mitigation efforts will be implemented to avoid and minimize these impacts.

3. Other wildlife [230.32]

Birds and other wildlife are likely to be temporarily displaced during construction due to noise, construction vehicles, and material placement. Because these impacts will only occur during construction, they are expected to be inconsequential and temporary. The loss of the wetlands and trees has a potential longer term impact. However, onsite or offsite mitigation will provide similar nearby habitat features and functions for birds and other wildlife that were displaced during the proposed project. The proposed actions will unlikely adversely affect birds and wildlife.

Potential Impacts on Special Aquatic Sites [Subpart E]:

1. Sanctuaries and refuges [230.40]

The proposed project will not affect State or Federal listed sanctuaries and refuges

2. Wetlands [230.41]

Wetlands will invariably be damaged or destroyed in the proposed action. Mitigation will occur to replace that which was lost either onsite or offsite, possibly in the form of wetland credits, within the same reach of the river that the damage occurred.

3. Mud flats [230.42]

The action is unlikely to adversely affect mud flats.

4. Vegetated shallows [230.43]

The action is unlikely to adversely affect vegetated shallows.

5. Coral reefs [230.44]

Not applicable.

6. Riffle and pool complexes [230.45]

Not applicable, since riffle and pool complexes are characteristics of streams. The upper Puyallup River is braided.

Potential Effects on Human Use Characteristics [Subpart F]:

1. Municipal and private water supplies [230.50]

Levee modification and construction are not expected to change the amount or quality of water to such a degree that supply and quality will be negatively affected.

2. **Recreational and commercial fisheries [230.51]**

   Any in-water work will done within the designated work window. Levee work will unlikely prevent access to recreational or commercial fishing in the long term; however, there could be short-term restrictions on recreational access during the action. Impacts to traditional fishing areas are unknown at this time but could be affected by the proposed action.

3. **Water-related recreation [230.53]**

   The project may temporarily affect water-related recreation. Recreational use of construction sites will be restricted while construction is commencing.

4. **Aesthetics [230.53]**

   During construction there will be some minor disturbance from noise and exhaust created by heavy equipment. After construction the shoreline is expected to look similar to existing conditions. The areas where the newly constructed flood walls and levees would be located already have human-made visual elements and infrastructure present. These areas may experience a decline in aesthetic appeal, but setbacks and mitigation sites are expected to offset this loss.

5. **Parks, national and historic monuments, national seashores, wilderness areas, research sites and similar preserves [230.54]**

   Construction may occur near or in recreational facilities including Mount Rainer National Park and several wilderness areas. Sections of the facilities located in the study area will need to be closed during construction for safety, but will reopen after completion of the construction activities. Mount Rainer National Park are not located within the study area. Recreational uses will not change after the proposed action is finished.

Evaluation and Testing [Subpart G]:

1. **General evaluation of dredged or fill material [230.60]**

   The proposed action would result in the placement of fill material with the construction of new levees and modification to existing levees. Levee material will be chosen under guidance of a hydraulic engineer. Exact class and placement is currently unknown at this phase.

2. **Chemical, biological, and physical evaluation and testing [230.61]**

   Materials will not be reused and all other materials will be appropriately tested according to Corps engineer guidelines.

Actions to Minimize Adverse Effects [Subpart H]:

1. **Actions concerning the location of the discharge [230.70]**

   The Corps has not selected a disposal site for any potential excavated material.

2. **Actions concerning the material to be discharged [230.71]**

   Levee material will be required to meet Corps standards for placement of riprap for the proposed new levees and modifications to existing levees. Material will be imported from an approved, clean source.

3. **Actions controlling the material after discharge [230.72]**

No actions should be required, as the structure is not expected to move after construction; however, should any structural deterioration occur, the responsible diking district will be expected to address it as the owner or bring it to the attention of the Corps.

4. **Actions affecting the method of dispersion [230.73]**

   As described above, proposed structures are expected to be stable after construction.

5. **Actions related to technology [230.74]**

   No specific advanced technologies will be used to repair the structure.

6. **Actions affecting plant and animal populations [230.75]**

   The Corps will coordinate construction activities and compensatory mitigation features with Tribal, State and Federal resource agencies to minimize impacts to fishery and wildlife resources. There will be temporary disturbance to wildlife in the project vicinity due to noise from operation of machinery. Possible planting of the levee will minimize lost riparian functions such as cover, shade, and input of nutrients. Compensatory mitigation is included through onsite or offsite mitigation. This is expected to offset impacts to fish and wildlife from the construction activities, the removal of vegetation at the project sites, and the placement of riprap on the river banks.

7. **Actions affecting human use [230.76]**

   The proposed project is not expected to diminish water quality, but may temporarily impact the aesthetics of the aquatic site and its recreational use.

8. **Other actions [230.77]**

   Best management practices will be used in the proposed construction to ensure that no unnecessary damage to the environment occurs during construction.

General Policies [33 CFR §320.4]

1. **Public Interest Review [320.4(a)] d**

   The Corps finds the proposed action to flood control structures to be in compliance with the 404(b)(1) guidelines and not contrary to public interest.

2. **Effects on wetlands [320.4(b)]**

   The Corps will obtain accurate wetland delineations of the proposed construction sites. Wetland resources will be avoided to the greatest extent possible. Destruction of wetland resources will be mitigated onsite or at an offsite mitigation bank. No net loss of wetlands is expected.

3. **Fish and wildlife [320.4(c)]**

   The Corps will consult with State and Federal resource agencies, tribes and other interested members of the public on this action. Conceptual mitigation is proposed to offset the loss of habitat.

4. **Water quality [320.4(d)]**

   The Corps certifies that this project will not violate Water Quality Standards as set forth by the Clean Water Act. The Corps will be seeking a 401 Water Quality Certification from the State of Washington.

5. **Historic, cultural, scenic, and recreational values [320.4(e)]**

   Existing historical and cultural resources within the project footprint are unknown at this time. However, surveys will be done prior to any work to asses, avoid, or mitigate damage done to these resources.

Effects on limits of the Territorial Sea [320.4(f)]

Not applicable, since the project will not occur in coastal waters.

7. **Consideration of property ownership [320.4(g)]**

Access for construction equipment and materials will be via public rights-of-way and real estate rights of entry and will be obtained prior to construction. Acquisition of property will be conducted through pertinent laws and regulations.

8. **Activities affecting coastal zones [320.4(h)]**

The Corps has determined that the proposed project complies with the policies, general conditions, and activities as specified in the Pierce County Title 18A Development Regulations Code. The proposed action will be consistent to the maximum extent practicable with the State of Washington Shoreline Management Program and policies and standards of the Pierce County Shoreline Management Program. A CZMA consistency determination will be submitted to WDOE.

9. **Activities in marine sanctuaries [320.4(i)]**

Not applicable, since the area is not a marine sanctuary.

10. **Other Federal, State, or local requirements [320.4(j)]**

The Corps will initiate formal consultation with NMFS and USFWS on the findings of the BA for the proposed project. A mitigation plan will be proposed to offset project impacts on endangered salmonids and their critical habitat.

11. **Safety of impoundment structures [320.4(k)]**

Not applicable, since the Corps is a Federal applicant and all structures will be built to standards.

12. **Water supply and conservation [320.4(m)]**

No permit is needed concerning water supply.

13. **Energy conservation and development [320.4(n)]**

Not applicable.

14. **Navigation [320.4(o)]**

Not applicable.

15. **Environmental benefits [320.4(p)]**

No net benefits are anticipated as a result of the proposed action.

16. **Economics [320.4(q)]**

Completion of the project will protect public infrastructure such as the residential and commercial areas, roads, and power lines. Protection granted by the project will prevent disruption of commerce and services should a flood occur in the Basin.

17. **Mitigation [320.4(r)].**

To address the change of substrate, loss of wetlands, riparian, and other aquatic habitats, the Corps will develop a mitigation strategy that could include onsite or offsite mitigation. All mitigation will preferably be completed within the reach of the impact being mitigated for and will replace that which was lost.

Appendix G-2

Environmental and Cultural Resources

Fish and Wildlife Coordination Act Report

Puyallup River Basin

Flood Risk Management Feasibility Study

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United States Department of the Interior

FISH AND WILDLIFE SERVICE

Washington Fish and Wildlife Office
510 Desmond Dr. SE, Suite 102
Lacey, Washington 98503

FEB 14 2014

Colonel Bruce A. Estok, Commander
U.S. Army Corps of Engineers, Seattle District
P.O. Box 3755
Seattle, Washington 98124-2255

Dear Colonel Estok:

Enclosed is the U.S. Fish and Wildlife Service's (FWS) Fish and Wildlife Coordination Act (FWCA) Report for the Puyallup River General Investigation authorized by Section 209 of the 1962 Flood Control Act. This report provides our comments and recommendation on the three proposed alternatives for this project: Alternative 1 – No Action, Alternative 2 – Levee Modifications, and Alternative 3 – Sediment Management and Levee Modifications.

Our comments have been prepared under the authority of and according to the provisions of the FWCA (48 Stat. 401, as amended 16 U.S.C. 661, *et seq.)* and fulfill section 2(b) of the FWCA. The purpose of the FWCA is to recognize the vital contribution of our wildlife resources to the Nation and to ensure that wildlife conservation receives equal consideration in planning and evaluation for water resource development programs (Smalley and Mueller 2004, p. I-21). The FWCA provides a basic framework for the orderly consideration of fish and wildlife conservation and enhancement measures in federally constructed, permitted, or licensed water development projects. The FWCA also allows the FWS to assess project impacts to fish and wildlife resources and to make recommendations to protect and enhance these resources.

We have based our comments and recommendations on documents prepared by the U.S. Army Corps of Engineers (Corps) and Pierce County, conversations and emails with the National Marine Fisheries Service, Washington Department of Fish and Wildlife, Muckleshoot Tribe, Puyallup Tribe, and resource information available from our files and library. The recommendations included in the report are provided to assist you in meeting your obligation, under sections 7(a)(1) of the Endangered Species Act and 2(a) of the FWCA, to use your authorities to promote the conservation of fish and wildlife, including listed species and their habitats.

We appreciate the opportunity to review the proposed alternatives to address flooding within the Puyallup River Basin. The FWS cannot support the No Action Alternative or either action alternative in their entirety as the alternatives contain measures that are detrimental to the aquatic environment and are contrary to the recovery of the federally listed bull trout (*Salvelinus confluentus*) and Chinook salmon (*Oncorhyncus tshawytschaa).* The FWS is available to continue to coordinate and discuss measures that will meet the purpose and need of the Puyallup River General Investigation, as well as, help restore listed salmonid populations and benefit our other wildlife resources. We look forward to this continued coordination with you on this project. For further information, please contact Jim Muck at (206)526-4740, Shirley Burgdorf at (360)534-9340, or Martha Jensen at (360)753-9000.

Sincerely,

For Ken S. Berg, Manager
Washington Fish and Wildlife Office

cc:
Corps, Seattle, WA (M. Scuderi)
NMFS, Lacey, WA (M. Longenbaugh)
WDFW, Olympia, WA (T. Livingood)
Muckleshoot Tribe, Auburn, WA (P. Reynolds)
Puyallup Tribe, Puyallup, WA (R. Ladley)

Assessment of the
Puyallup River General Investigation

Fish and Wildlife
Coordination Act Report

Prepared for:

U.S. Army Corps of Engineers
Seattle District
Seattle, Washington 98124-3577

Prepared By:

U.S. Fish and Wildlife Service
Washington Fish and Wildlife Office
Lacey, Washington 98503

Preparers: Jim Muck, Shirley Burgdorf

January 2014

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LISTS OF FIGURES AND TABLES

LIST OF ACRONYMS

BIBI	Benthic Index of Biotic Integrity
cfs	Cubic feet per second
Corps	U.S. Army Corps of Engineers
Ecology	Washington Department of Ecology
FAL	Federal Authorized Levees
FWCA	Fish and Wildlife Coordination Act
FWS	U.S. Fish and Wildlife Service
LWD	Large woody debris
MMD	Mud Mountain Dam
NMFS	National Marine Fisheries Service
PCE	Primary constituent element
RM	River Mile
WDFW	Washington Department of Fish and Wildlife

INTRODUCTION

This Fish and Wildlife Coordination Act (FWCA) Report presents the conclusions of the U.S. Fish and Wildlife Service (FWS), in coordination with the National Marine Fisheries Service (NMFS), Washington State Department of Wildlife (WDFW), and the Puyallup and Muckleshoot Tribes on the effects of the proposed U.S. Army Corps of Engineers' (Corps) Puyallup River General Investigation in Pierce County, Washington. This report is based on draft and final documents provided by the Corps and Pierce County. Changes to the project description were provided to the FWS on February 5, 2014, after the Corps was provided a draft copy of the FWCA Report for their review. The FWS also received on February 5, 2014, the Post Regional Re-scoping Charrette Vertical Team Meeting Draft Report Synopsis on the project, which provided an overview of all the alternatives that were formulated to address flood risk in the Puyallup River Watershed. This FWCA Report is provided pursuant to the FWCA (48 Stat. 401, as amended: 16 U.S.C. 661, *et seq.*) and fulfills section 2(b) of the FWCA.

Project Location and Setting

The Puyallup River General Investigation evaluates significant flooding problems in the Puyallup Watershed. The areas analyzed include the lower Puyallup River sub-basin consisting of the Puyallup River from Commencement Bay to river mile (RM) 10.4, the upper Puyallup River sub-basin from RM 10.4 to RM 28.6 at Fox Creek, the White River sub-basin from its confluence with the Puyallup River to Mud Mountain Dam (MMD) at RM 29.6, and the Carbon River sub-basin from its confluence with the Puyallup River to RM 8.4 located approximately 2.4 miles upstream of the Highway 162 Bridge (Figure 1). The Carbon River sub-basin also includes South Prairie Creek from its confluence with the Carbon River to approximately RM 7 at the confluence of Wilkeson Creek.

The Puyallup River Basin encompasses a drainage area of approximately 1,040 square miles. The White River drains approximately 464 square miles, the Carbon River drains 230 square miles, and the upper Puyallup River (above the confluence with the Carbon River) drains 186 square miles. Three dams operate within the basin: 1) Mud Mountain Dam, 2) the Buckley diversion dam on the White River, and 3) the Electron Hydroelectric Project on the Puyallup River. Mud Mountain Dam was completed in 1948 to provide flood control in the Puyallup River downstream of its confluence with the White River. The dam captures flow from the upper 400 square miles of the White River watershed primarily during potential flood events; it is otherwise operated as a run-of-the river facility. The smaller dam in Buckley, Washington, is related to the former Puget Sound Energy White River Hydroelectric Project on Lake Tapps that ceased hydropower production in 2004. This structure and a diversion flume are currently used to support two independently owned fish trap-and-haul facilities located on the left (Muckleshoot Indian Tribe facility) and right (Corps facility) of the Buckley dam. The current owner of the diversion dam, flume, and other former hydroelectric project facilities, Cascade Water Alliance, proposes to use Lake Tapps for future municipal water supply. The Electron Hydroelectric Project on the Puyallup River is operated by Puget Sound Energy and does not provide flood control. Water is diverted out of the Puyallup River approximately 10 miles upstream of the powerhouse.

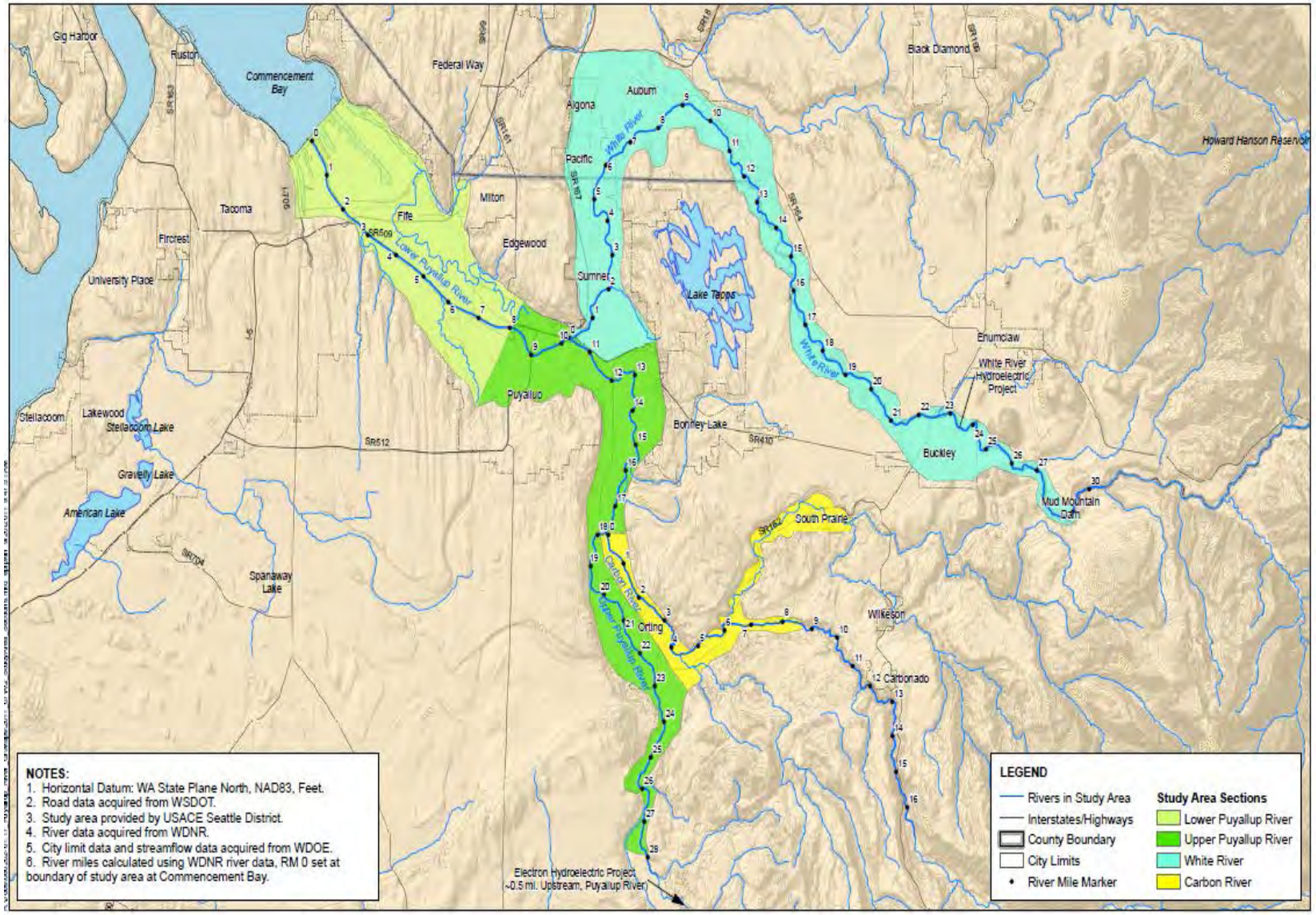

Figure 1. Map of the Puyallup River General Investigation project area. Based on information received from the Corps on February 5, 2014, the Carbon River project area does not include South Prairie Creek.

Upland/Terrestrial Habitat

Land use within the Puyallup River basin study area varies between the upper and lower reaches of the three watersheds. The upper portions of the watersheds above the project area are predominantly used for commercial forestry on lands owned by the U.S. Forest Service and private landowners.

Within the project area, the Carbon and White River sub-basins contain primarily rural residential and agricultural land uses (Table 1). The lower Puyallup River sub-basin land use is categorized as urban, industrial, and residential (Kerwin 1999, p. 47). Urban development is the main land use in the lower Puyallup and White River sub-basins. Agriculture is common in the upper Puyallup River sub-basin. Coniferous and hardwood forests are most prevalent in the Carbon River sub-basin. The remaining lands consist of wetlands, mixed riparian and conifer/hardwood forest, or open areas.

Table 1. Land use within the project area.

	Lower Puyallup Sub-basin	**Upper Puyallup Sub-basin**	**Carbon River Sub-basin**	**White River Sub-basin**	**Total Study Area**
Urban	64.2%	20.2%	16.6%	53.9%	46.4%
Agriculture	25.2%	51.7%	30.9%	11.8%	26.1%
Coniferous/ Hardwood Forests	0	19.8%	38.5%	24.1%	17.2%
Other	10.6%	8.3%	14.0%	10.2%	10.3%
Total	89.4%	91.7%	86.0%	89.8%	89.7%

With urban and agricultural land uses comprising over 70 percent of the project area, vegetation in the project area consists primarily of urban ornamental trees and shrubs and agriculture crops and non-native pasture grasses. In agricultural areas, common crops include lettuce, cabbage, radishes, green onions, and hay (Anchor QEA, 2011, p. 89). Periods of bare soil conditions are associated with cultivated crops after the harvest. Pastures are mowed, hayed, or grazed throughout the year.

Adjacent to urban and agricultural lands, Western hemlock (*Tsuga heterophylla*) and Douglas-fir (*Pseudotsuga menziesii*) are the most common species within the conifer-hardwood forests. Western red cedar (*Thuja plicata*), Sitka spruce (*Picea sitchensis*), grand fir (*Abies grandis*), and big-leaf maple (*Acer macrophyllum*) are also present.

Along the rivers, streams, lakes and wetlands, riparian trees such as red alder (*Alnus rubra*), black cottonwood (*Populus balsamifera*), big-leaf maple and Oregon ash (*Fraxinus latifolia*) can be found. Pacific willow (*Salix lucida*) can be the dominate species along the riverbanks.

Shrubs and herbs that can be found in the understory include salmonberry (*Rubus spectabilis*), salal (*Gaultheria shallon*), vine maple (*A. circinatum*), red-osier dogwood (*Cornus sericea*), thimbleberry (*Rubus parviflorus*), slough sedge (*Carex obnupta*), Dewey sedge (*C. deweyana*), Sitka sedge (*C. aquatilis*), and skunk cabbage (*Lysichiton americanus*).

Cattails (*Typha latifolia*), bulrush species (*Scirpus acutus, S. tabernaemontani, S. maritimus, S. americanus*), and sedges (*Carex* spp.) are widespread throughout wetland habitats. Wetland grasses that can be found include American sloughgrass (*Beckmannia syzigachne*), bluejoint reedgrass (*Calamagrostis canadensis*), mannagrass (*Glyceria* spp.), and tufted hairgrass (*Deschampsia caespitosa*).

Water Quality

The White, Carbon, and Puyallup Rivers all originate from glaciers located on Mount Rainier. Land use changes along these rivers result in continued degradation of water quality in the project area. Because the rivers originate from glaciers, water temperatures within the project area are relatively cool during the summer. Within the Puyallup River, the maximum water temperature at RM 8.3 between 1970 and 2012 was 17.9 °C, with only seven readings over 16 °C (Ecology 2013a). The Puyallup Tribe's monitoring of the lower Puyallup River documented a 7-day average of the daily maximum of 17.5 °C in August 2002, with a maximum daily temperature of 18.2 °C (Ecology 2013b). Within the Carbon and White Rivers, water temperatures are elevated due to agricultural land use (Kerwin 1999, p. 64). Maximum water temperatures in the White and Carbon Rivers were 20.2 °C and 18.8 °C, respectively (Ecology 2013a), which exceed water quality parameters. The lower Puyallup and White Rivers are on the Washington Department of Ecology's 303(d) list for temperature (Ecology 2013b).

For other water quality parameters, the lower Puyallup River met water quality standards for fecal coliform, lead, mercury, and copper (Anchor QEA 2011, pp. 77-80). The White River exceeded water quality standards for fecal coliform and pH (Anchor QEA 2011, pp. 81-83). The Carbon River met water quality standards for all parameters except temperature (Anchor QEA 2011, p. 81).

Aquatic Habitat

With most of the Puyallup River project area developed (Table 1), the river is highly modified. For over 100 years, the Puyallup River has been channelized and altered by levees and revetments. The extensive levee and revetment structures within the project area result in straight and confined rivers with little connection to their floodplains. However, the upper portions of the White and Carbon River sub-basins are more natural with sections of multiple channels and extensive floodplains. The Puyallup River represents one of the more extreme examples of floodplain modification in the Puget Sound region (NMFS 2007, Chapter 3, p. 77). The channelization and system of levees within the project area have resulted in increased water velocity, potential for streambank scouring, and sediment transport. Additionally, mature riparian vegetation in the lower Puyallup River sub-basin is lacking with less than 5 percent of the riparian area being functional. Table 2 provides the total length of the levees within the project area that are maintained by the Corps under the Public Law (PL) 84-99 Flood Control and Coastal Emergency Act.

Table 2. Total number of miles of the project area that contain dikes, levees, and revetments, and the total number of miles eligible for the PL 84-99 program.
(Kerwin 1999, pp. 42, 59, and 72; Corps 2013a, pp. 5 and 6)

River Reach	Left Bank		Right Bank	
	Total miles	Miles eligible for the PL 84-99 program	Total miles	Miles eligible for the PL 84-99 program
Lower Puyallup (RM 0.0 to 10.3)	10.3 miles	6.7 miles	10.3 miles	7.6 miles
Middle Puyallup (RM 10.3 to 17.4)	7.1 miles	3.4 miles	7.1 miles	1.7 miles
Upper Puyallup (RM 17.4 to 29.6)	11.2 miles	4.5 miles	11.2 miles	7.9 miles
White River (RM 0.0 to 29.0)	8.5+ miles[1]	1.3 miles	8.5+ miles[1]	--------
Carbon River (RM 0.0 to 9.0)	8.0 miles	6.86 miles	8.0 miles	2.25 miles

[1] The upper White River has localized areas which contain flood control structures. Total length is unknown.

The three dams, Electron Dam on the Puyallup River and MMD and the Buckley diversion dam on the White River, historically blocked fish passage upstream to tributaries and spawning and rearing habitats. The dams now have fish passage, although the current passages are not ideal and cause significant delays, injury and mortality of listed salmonids. Buckley diversion dam was outfitted with a fish ladder prior to the construction of the current trap-and-haul facility, which was built in 1941. Salmonids entering the fish-trap are removed and transported above both MMD and the Buckley diversion dam and released. Electron Dam has a fish ladder which provides access for adult fish to the upper reaches of the Puyallup River, but kills a large fraction of the juvenile salmon that emigrate through the forebay of Electron Dam (Ladley et al. 2006, p. 3).

The project area has had extensive damage from high flow events. Highest recorded stream flows in the Puyallup River system occurred in December 1933, with peak discharge at 57,000 cubic feet per second (cfs). A second peak at 46,000 cfs occurred 12 days later. In February 1996, high rainfalls resulted in a peak discharge of 46,700 cfs. Flood control at MMD prevented overtopping of levees and extensive damage in the project area (Pierce County 2009, Chapter 1, pp. 1-3 and 1-4). Since January 1990, there have been seven major flood events that have resulted in 54,731 lineal feet (greater than 10 miles) of damage to levees in the Puyallup River, 31,141 lineal feet (7 miles) of damage in the Carbon River and 670 feet in the White River. Damage to the levees includes total or partial failure with toe and/or slope damage (Pierce County 2013).

Project Authority and Purpose

The project is authorized by Section 209 of the 1962 Flood Control Act (PF 87-874) and Study Resolution, Docket 2645, Committee on Transportation and Infrastructure, U.S. House of Representatives, dated 21, June 2000. The purpose of the project is to investigate and recommend solutions to provide flood risk reduction in Pierce and King Counties in the Puyallup, White, and Carbon Rivers.

Project Description

The Corps is analyzing three alternatives to address flooding within the Puyallup watershed: Alternative 1 - No Action Alternative, Alternative 2 – Levee Modifications, and Alternative 3 - Sediment Management and Levee Modifications.

Alternative 1 - No Action Alternative

The No Action Alternative assumes that no project would be implemented by the Corps to achieve the objectives of addressing flooding issues in the Puyallup Watershed. State and local actions may be undertaken to address flooding issues, but the due to budgetary concerns, the Corps anticipates that major funding requirements would not likely be accomplished through the State and local actions (Corps 2013b).

Alternative 2 – Levee Modifications (Appendix A for a map showing action locations)

Alternative 2, levee modifications, is intended to modify the existing levee system to manage flood risk by setting back levees, increasing levee heights, improving levee reliability by installing flow deflectors or other structures to deflect flows away from the levee, or building new levees. The following are specific actions that will occur with this alternative.

Lower Puyallup River Sub-Basin

1) *Federal Authorized Levees:* The Federal Authorized Levees (FAL) extend from RM 0.7 to RM 2.7 on the right bank and RM 0.7 to RM 2.9 on the left bank. The FAL between RM 2 and RM 2.7 on the right bank and RM 1.5 to RM 2.9 on the left bank would be raised.

2) *North Levee Road A- Setback*: Setback the North Levee Road levee on the right bank approximately 1,000 ft from RM 2.7 to 4.2 (Frank Albert Road); 80 ft to 100 ft from RM 4.2 to RM 6; 600 ft from RM 6 to RM 7.1; and 80 ft to 100 ft from RM 7.1 to RM 8.1. The levees would also be raised to safely convey the 100-year flood elevation plus 3 ft of freeboard.

3) *River Road Levee Floodwall:* Construct a floodwall along the River Road Levee on the left bank from RM 2.9 to RM 7.2. The floodwall height will average about 6 ft and range from 4 ft to 8 ft.

4) *Lower Puyallup River Extension Levee (or Floodwall):* Extend the existing River Road Levee, which is 1,100 ft long, on the left bank an additional 7,200 ft from RM 7.2 to RM 8.6. River Road Levee varies in height between 8 ft to 13 feet. In areas where the levee is 8 ft tall, an additional 3.5 ft of fill will be placed on top of the existing levee.

5) *Clear Creek New Levee:* Construct a new levee, approximately 15,000 linear ft, 10 ft in height, with a 14-foot meander along Clear Creek.

White River

6) *White River New Levees*: Construct new levees along the right bank from RM 1.7 to RM 4.5 and RM 4.9 to RM 6.2 at Pacific Park.

7) *Property Acquisition:* Acquire 35 acres of property between RM 4.6 and RM 5 along the left bank. These properties have experienced repetitive flood impacts and are at risk of additional adverse flooding.

8) *Bridge Modification:* Widen the Stewart Street Bridge at RM 4.9. The bridge is a known constriction point and the project would further improve flow capacity through the structure.

9) *Sediment Trap:* Construct and maintain a sediment trap upstream of MMD to capture significant amounts of sediment that would otherwise be transported to the White and Lower Puyallup Rivers.

10) *MMD Operational Changes:* Make operational changes to MMD during flood events, specifically change the desired target maximum project outflow that provides appropriate flood risk management to the White and Puyallup Rivers in conjunction with the other proposed measures. Changes would modify the existing flood control regulation, as outlined in the Water Control Manual, to control flow on the Puyallup River at 45,000 cfs, although capacity is 50,000 cfs, and by limiting releases to the White River at 12,000 cfs.

Upper Puyallup River Sub-Basin

11) *HWY 410 Floodwall and Levee:* Construct a combination of a new levee (between RM 10.7 and RM 11.0) and floodwall (between RM 11.0 and RM 11.8) adjacent to SR 410. The height of the levee and floodwall will vary between 6 ft to 12 ft to provide 3 ft of freeboard from the 100-year flood elevation.

12) *Jones Levee Improvement:* Modify the Ford Levee by constructing a flow deflector into the levee and by increasing the height of the Jones Levee approximately 1.5 ft to 6.5 ft from RM 21.3 to RM 22.5 along the right bank.

13) *Sediment Trap:* Construct and maintain a sediment retention structures in the upper reaches of the Upper Puyallup River sub-basin below Electron Dam to capture a significant amount of sediment that would otherwise be transported downstream throughout the Puyallup River.

Carbon River Sub-basin

14) *Lower Carbon River Levee Improvement:* Modify the Riddell Levee (RM 0 to RM 1.7) and Bridge Street Levee (RM 1.7 to RM 4.0) by raising the levee height by up to 4 ft. The downstream Riddell tie-in section will be raised up to 7 ft. Construct a flow deflector at the end of the Bridge Street Levee between RM 3.2 and RM 4.0 to deflect flows from the Bridge Street Levee and adjacent revetments.

15) *Property Acquisition:* Acquire approximately 140 acres of property along the Carbon River that has experienced repetitive flood impacts and those structures that are at risk to adverse flood impacts. Property acquisitions are considered along the Carbon River near SR 162 Bridge which is a known constriction point and behind Alward Road Segment 1 Levee.

Alternative 3 – Sediment Management and Levee Modifications (Appendix B for a map showing action locations)

Alternative 3, sediment management and levee modifications, is intended to manage sediment and its effects by mainstem or spot dredging as primary measures to manage flood risks in the basin, and construction of new levees and levee improvements (increasing levee reliability and/or levee height) to manage flood risks that the dredging component does not provide. The following are specific actions that will occur with this alternative.
Lower Puyallup River Sub-Basin

1) *Federal Authorized Levees*: The FAL between RM 2 and RM 2.7 on the right bank and RM 1.5 to RM 2.9 on the left bank would be raised.

2) *Mainstem Dredging:* Dredge between RM 3.1 and RM 7.4. The dredging is not anticipated to provide a 100-year level of protection, so a levee modification component (see #3, #4 and #5 below) is included to manage flood risks.

3) *North Levee Road Levee Raise:* Modify the North Levee Road levee from RM 2.7 to RM 4.9 by raising the levee to safely convey the 100-year flood elevation plus three feet of freeboard.

4) *River Road Levee Floodwall:* Construct a floodwall on the left bank from RM 2.9 to RM 4.9 near River Road Levee. The wall height will average 8 ft and range from 4 ft to 10 ft.

5) *Lower Puyallup River Extension Levee (or Floodwall):* Extend the levee on the left bank from RM 7.2 to RM 8.6. The new levee extends the existing River Road Levee approximately 6,100 ft. The levee height varies between 8 ft to 13 feet. In areas where the levee is 8 feet tall, there will be about 3.5 ft of additional fill placed on the existing berm.

6) *Clear Creek New Levee:* Construct a new levee, approximately 15,000 linear ft, 10 ft in height, with a 14-foot contour along Clear Creek.

White River Sub-Basin

7) *Mainstem Dredging:* Dredge from RM 2.1 to RM 4.5 and RM 4.9 to RM 6.2. Dredging is anticipated to provide a 100-year level of protection where needed. Some levee modification (see #3 below) is included to manage flood risks.

8) *White River New Levees:* Construct a new levee along the right bank from RM 1.7 to RM 2.8.

9) *Sediment Trap:* Construct a sediment trap upstream of MMD to capture a significant amount of sediment that would otherwise be transported to the White and Lower Puyallup Rivers.

10) *MMD Operational Changes*: Make operational changes to MMD during flood events, specifically change the desired target maximum project outflow that provides appropriate flood risk management to the White and Puyallup Rivers in conjunction with the other measures. Changes would modify the existing flood control regulation, as outlined in the Water Control Manual, to control flow on the Puyallup River at 45,000 cfs, although capacity is 50,000 cfs, and by limiting releases to the White River at 12,000 cfs.

Upper Puyallup River Sub-Basin

11) *HWY 410 Floodwall and Levee*: Construct a combination of a new levee, between RM 10.7 and RM 11.0, and floodwall, between RM 11.0 and RM 11.8, adjacent to SR 410. The height of the levee and floodwall will vary between 6 ft to 12 ft to provide 3 ft of freeboard from the 100-year flood elevation.

12) *Mainstem Dredgi*ng: Dredge the mainstem from RM 21.3 to RM 22.7 along the Jones Levee.

13) *Jones Levee Improvement*: Modify the Ford Levee from RM 23.4 and RM 23.6 by construction a flow deflector and raising the levee.

14) *Sediment Trap*: Construct a sediment retention structures in the upper reaches of the Upper Puyallup River sub-basin below Electron Dam to capture a significant amount of sediment that would otherwise be transported downstream throughout the Puyallup River.

Carbon River Sub-Basin

15) *Lower Carbon River Levee Improvement*: Modify the Riddell Levee (RM 0 to RM 1.7) and Bridge Street Levee (RM 1.7 to RM 4.0) by raising the levee height by up to 4 ft. The downstream Riddell tie-in section will be raised up to 7 ft. Construct a flow deflector at the end of the Bridge Street Levee between RM 3.2 and RM 4.0 to deflect flows from the Bridge Street Levee and adjacent revetments.

16) *Property Acquisitions*: Acquire approximately 140 acres of property that have experienced repetitive flood impacts and structures that are at risk of adverse flood impacts along the Carbon River. Property acquisitions considered are near SR 162 Bridge, which is a known constriction point, and behind Alward Road Segment 1 Levee.

FISH AND WILDLIFE RESOURCE

Aquatic Invertebrates

The Puget Sound Stream Benthos working group uses the Benthic Index of Biotic Integrity (BIBI) to determine the general health of a stream. The BIBI integrates ten different metrics to derive a score from 10 to 50 on a stream's health. Table 3 shows the August 2011 results for sites within the project area. The table details the percentage of the number of benthic invertebrate species based on organisms collected, overall BIBI score (out of 50 points), and overall ranking (Anchor QEA, 2011, p. 106).

Table 3. Benthic Index of Biotic Integrity results for the project area.

Basin	Dominance Percentage	Predator Percentage	Tolerant Percentage	Number of Organisms	Overall Score	Ranking
Lower Puyallup River	65.0	9.5	24.9	589.1	23.7	Fair/poor
Upper Puyallup River	60.0	8.8	10.5	740.0	30.7	Good/fair
Carbon River	64.4	5.3	7.7	677.3	28.5	Fair/poor
South Prairie Creek	65.6	4.6	29.7	828.0	29.7	Fair/poor
White River	51.2	17.4	17.4	562.0	35.0	Good/fair

Dominance percentage is calculated by adding the number of individuals in the three most abundant taxa and dividing by the total number of individuals in the sample. As diversity declines, a few taxa come to dominate the community. Predator percentage represents the peak of the food web and depends on other invertebrates that can be preyed upon. This provides a measure of the trophic complexity supported by a site. Tolerant percentage represents the percent of taxa tolerant to human disturbance (PSSB 2012).

Fish

The Puyallup River watershed contains native and non-native fish species. The National Park Service has conducted fish sampling within the Mount Rainier National Park and have found rainbow trout/steelhead (*Oncorhyncus mykiss*), bull trout (*Salvelinus confluentus*), coastal cutthroat trout (*O. clarki clarki*), eastern brook trout (*S. fontinalis*), Chinook salmon (*O. tshawytscha*), coho salmon (*O. kisutch*), sockeye/kokanee salmon (*O. nerka*), pink salmon (*O. gorbuscha*), mountain whitefish (*Prosopium williamsoni*), and three sculpin species: slimy (*Cottus cognatus*), torrent (*C. rhotheus*), and shorthead (*C. confuses*) (NPS 2012). Other fish found within the Puyallup River Basin include western brook lamprey (*Lampetra richardsoni*), Pacific lamprey (*L. tridentate*), long-nose dace (*Rhinichthys cataractae*), three-spine stickleback (*Gasterosteus aculeatus*), and sunfish (*Lepomis* spp.) (Berger et al. 2009, p. 49).

Birds

Bird species that may be found in the project area are based on the vegetation and habitat present in the study area (Anchor QEA, 2011, p. 107). Birds from the following families have been documented in the project area: Ducks, geese and swans; grouse and quail; loons; grebes; cormorants and allies; pelicans, herons, ibises and allies; hawks and eagles; cranes and rails; sandpipers and plovers; pigeons and doves; owls; nighthawks; swifts and hummingbirds; kingfishers; woodpeckers; falcons; and perching birds.

In June 2006, a Bioblitz, a 24-hour species inventory conducted for the lower White River documented 81 species of birds (PCBA 2007, p. 4). In 2007, 40 species were located using the same methodology. Appendix C provides a list of birds observed in 2006.

Mammals

Mammals within the study area also depend on the vegetation and habitat present (Anchor QEA, 2011, p. 110). Terrestrial mammals from the following families have been documented in the project area: pouched mammals (opossums); insect-eaters (shrews, moles); winged mammals (bats); hopping mammals (rabbits, hares, picas); rodents (beavers, squirrels, mice, gophers, marmots); meat-eaters (foxes, coyotes, cougar, bobcat, bear, raccoons, skunks, weasels); and hoofed mammals (elk, and deer). Appendix C provides a list of mammals identified during the 2006 Bioblitz.

Reptiles and Amphibians

The project area also supports populations of native and introduced snakes, lizards, frogs, salamanders, and turtles. Species of concern include, but are not limited to: the Oregon spotted frog (proposed for listing as threatened), Pacific giant salamander, western pond turtle, and bullfrogs (introduced).

FEDERALLY LISTED AND PROPOSED SPECIES AND CRITICAL HABITAT

The following federally listed and proposed species and designated critical habitat may occur in the project area.

FWS Species:	
Coastal-Puget Sound Bull Trout	Threatened
Coastal-Puget Sound Bull Trout Critical Habitat	
Marbled Murrelet (*Brachyramphus marmoratus*)	Threatened
Northern Spotted Owl (*Strix occidentalis caurina*)	Threatened
Yellow-Billed Cuckoo (*Coccyzus americanus*)	Proposed Threatened
NMFS Species:	
Puget Sound Chinook Salmon	Threatened
Puget Sound Chinook Salmon Critical Habitat	
Puget Sound Steelhead	Threatened
Puget Sound Steelhead Critical Habitat	Proposed

Coastal-Puget Sound Bull Trout

Bull trout were listed as threatened on November 1, 1999 (64 FR 58910). Bull trout populations exhibit four distinct life-history types: resident, fluvial, adfluvial, and anadromous. Resident, fluvial, and adfluvial forms exist throughout the range of the bull trout (Rieman and McIntyre 1993, p. 2) and spend their entire life in freshwater. The only known anadromous form within the coterminous United States occurs in the Coastal-Puget Sound region (USFWS 2004, p. 11).

For all life-history types, juveniles rear in tributary streams for several years before migrating downstream into a larger river, lake, or estuary and/or nearshore marine area to mature (Rieman and McIntyre 1993, p. 2).

The Puyallup River contains the southernmost population of bull trout in the Puget Sound Management Unit. The Puyallup core area is critical to maintaining the overall distribution of migratory bull trout within the Puget Sound Management Unit because it is the only anadromous bull trout population in south Puget Sound. Anadromous, fluvial, and resident bull trout life history types are found in the Puyallup River Basin.

Spawning occurs in the upper reaches of the basin, outside of the project area, where higher elevations produce the cool water temperature required by bull trout. Bull trout spawning in the Puyallup core area appears to occur earlier, beginning in September, than what has been typically observed within other Puget Sound streams. Rearing is anticipated to occur throughout the watershed, but sampling indicates that the majority of rearing is confined to the upper reaches. Primary foraging, migration, and overwintering habitat for migratory bull trout within the core area is considered to be in the mainstem reaches of the White, Carbon, and Puyallup Rivers. Figure 2 shows the trend in the number of bull trout captured at the Buckley fish trap and transported and released upstream of MMD (Corps 2013c). It is believed that the recent increases in bull trout at the trap likely are related to higher abundance of pink and coho salmon in the watershed.

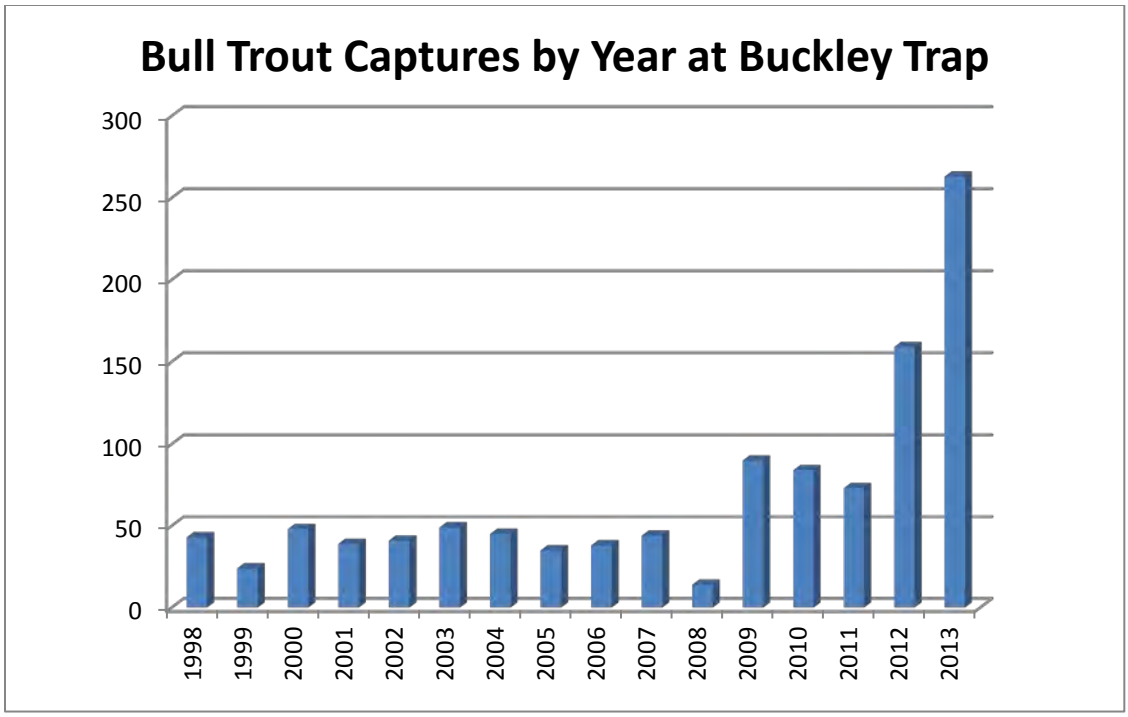

Figure 2. Bull trout captured at Buckley fish trap for all years.

Bull trout are within the lower White River year round, and have been captured and transported around Mud Mountain Dam in all months, with most migration occurring in the summer from May through August (Figure 3) (Corps 2013c).

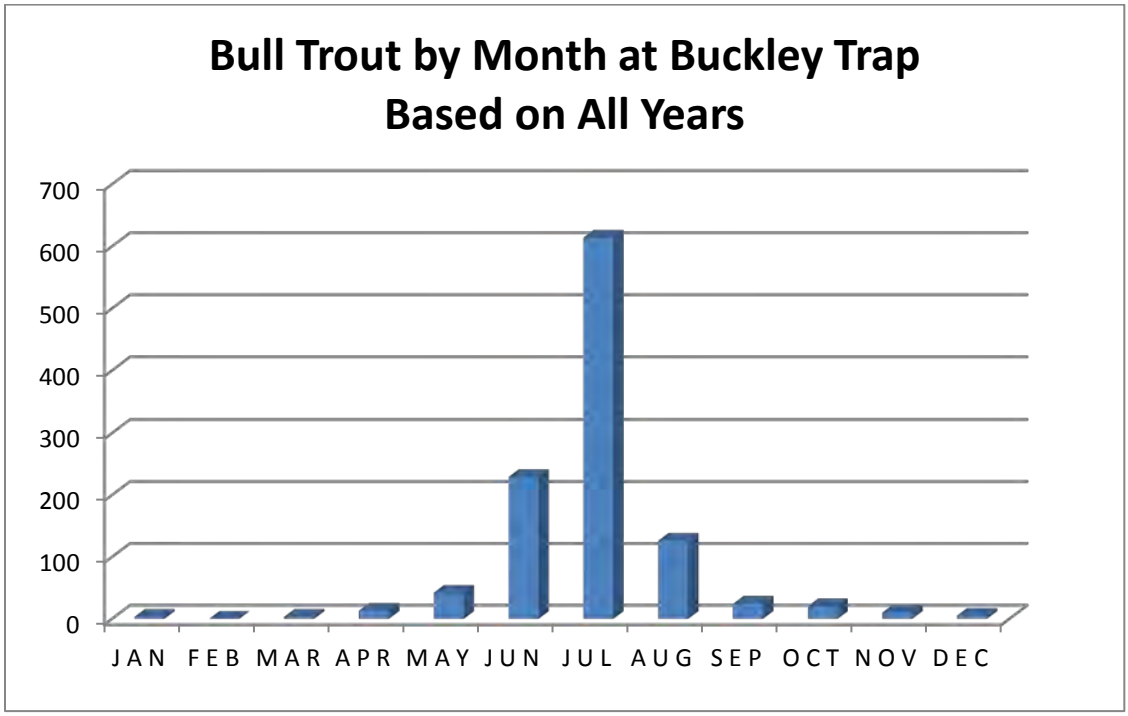

Figure 3. Total number of bull trout captured each month at the Buckley Trap.

Puget Sound Bull Trout Critical Habitat

The FWS published a final critical habitat designation for the conterminous United States population of the bull trout on October 18, 2010 (75 FR 63898). The final rule identified nine primary constituent elements (PCEs) essential for the conservation of bull trout.

Within streams, the critical habitat designation includes the stream channels within the designated stream reaches with the lateral extent defined by the bankfull elevation on one bank to the bankfull elevation on the opposite bank. In cases where the bankfull elevation is not evident on either bank, the ordinary high-water line determines the lateral extent of critical habitat.

Eight of the nine PCEs of bull trout critical habitat are in the project area:

- PCE #1: Springs, seeps, groundwater sources, and subsurface water connectivity (hyporheic flows) to contribute to water quality and quantity and provide thermal refugia.

- PCE #2: Migration habitats with minimal physical, biological, or water quality impediments between spawning, rearing, overwintering, and freshwater and marine foraging habitats, including but not limited to permanent, partial, intermittent, or seasonal barriers.

- PCE #3: An abundant food base, including terrestrial organisms of riparian origin, aquatic macroinvertebrates, and forage fish.

- PCE #4: Complex river, stream, lake, reservoir, and marine shoreline aquatic environments, and processes that establish and maintain these aquatic environments, with features such as large wood, side channels, pools, undercut banks and unembedded substrates, to provide a variety of depths, gradients, velocities, and structure.

- PCE #5: Water temperatures ranging from 2 to 15 °C (36 to 59 °F), with adequate thermal refugia available for temperatures that exceed the upper end of this range. Specific temperatures within this range will depend on bull trout life-history stage and form; geography; elevation; diurnal and seasonal variation; shading, such as that provided by riparian habitat; streamflow; and local groundwater influence.

- PCE #7: A natural hydrograph, including peak, high, low, and base flows within historic and season ranges or, if flows are controlled, minimal flow departure from a natural hydrograph.

- PCE #8: Sufficient water quality and quantity such that normal reproduction, growth, and survival are not inhibited.

- PCE #9: Sufficiently low levels of occurrence of nonnative predatory (e.g., lake trout [*S. namaycush*], walleye [*Sander bitreus*], northern pike [*Esox lucius*], smallmouth bass [*Micropterus dolomieu*]); interbreeding (e.g., brook trout); or competing (e.g., brown trout [*Salmo trutta*]) species that, if present, are adequately temporally and spatially isolated from bull trout.

Marbled Murrelet

Marbled murrelets were listed as threatened on September 28, 1992. The marbled murrelet is a small seabird that feeds primarily on fish and invertebrates in the nearshore marine waters. They spend most of their lives on the marine waters and come inland to nest. Marbled murrelets use older forest stands for nesting within 50 miles of marine waters. Forest stands are generally characterized by large trees greater than 32 inches diameter, multi-storied stand, and a moderate to high canopy closure. Within the Puyallup River Basin, designated critical habitat is located in the upper watershed all on National Forest lands, outside of the action area.

There are no known occupied marbled murrelet sites in the immediate action area. However, there are potentially high and moderately high quality marbled murrelet habitat within and around the action areas (Appendix B). Potential nesting habitat within the action area includes the mature forests along the rivers, especially in the upper reaches of the White River sub-basin. Marbled murrelet surveys were conducted around MMD, but no detections were recorded.

Northern Spotted Owl

The northern spotted owl was listed as federally threatened on June 26, 1990. Northern spotted owls are medium-sized birds found at elevation up to approximately 7,000 feet in a variety of forested habitat types: Douglas-fir, western hemlock, grand fir, white fir, ponderosa pine, and mixed evergreen. Northern spotted owls nest almost exclusively in trees in forests having complex structure dominated by large diameter trees. Foraging habitat is the most variable of all habitats used by the northern spotted owls and ranges from complex structure to forests with lower canopy closure and smaller trees. Within the Puyallup River Basin, designated critical habitat is located in the upper watershed all on National Forest lands, outside the action area. There are no historic northern spotted owl nest sites in the action area; they are all located on Federal lands in the upper watershed.

Yellow-Billed Cuckoo

On October 3, 2013, the yellow-billed cuckoo was proposed for listing as a federally threatened species. The yellow-billed cuckoo is a migratory bird wintering in South America and breeding in western North America. Nesting occurs almost exclusively in low to moderate elevation riparian woodlands that cover 50 acres or more. A large majority of the nests are built in willow trees, but other species such as alders, cottonwood, and tamarisk are also used. Little information is known on the foraging habitats needed by yellow-billed cuckoos, but high foliage volume of cottonwoods appears to be an important characteristic of foraging sites.

Yellow-billed cuckoos are thought to still breed in Washington, but the numbers are extremely low, with pairs numbering in the single digits. The river floodplain habitats bordering Puget Sound, historically had the most yellow-billed cuckoo sightings in the State. No yellow-billed cuckoo sightings have been documented within the project area, but surveys have not been conducted.

Puget Sound Chinook Salmon

Chinook salmon were designated as threatened on March 24, 1999 (64 FR 14307). The threatened status was reaffirmed on June 28, 2005 (70 FR 37160). Late returning "fall-run" Chinook natural spawning within the Puyallup River Basin occurs in South Prairie Creek up to RM 15, the Puyallup River mainstem up to the Electron Dam, and in the lower Carbon River. Some spawning is now believed to occur in the upper Puyallup River since passage has recently been established at the Electron Diversion Dam (Shared Strategy 2007, p. 274). Approximately 99 percent of Puyallup River fall-run Chinook salmon are ocean type fish, with the remaining one percent being stream type fish (Beechie et al. 2006, p. 563). The White River population of early-returning Spring Chinook salmon is genetically unique and very important to recovery of the Puget Sound Evolutionarily Significant Unit.

The naturally spawning Chinook population in the Puyallup River is comprised of a mixture of natural and hatchery origin fish: 30 percent of the White River and 60 percent of the Puyallup Chinook are hatchery fish, for the years 2005 to 2009 (Ford 2011, p. 186). Both the White and Puyallup populations have negative long-term trends in productivity (Ford 2011, p. 195).

The Puyallup River population is one of five populations of fall-run Chinook in the Central and South Puget Sound basin (i.e., Sammamish, Cedar, Green and Duwamish, Puyallup, and Nisqually Rivers). This population needs to improve from its current conditions to meet the Chinook salmon recovery criteria identified in the Puget Sound Salmon Recovery Plan. For this reason, it is important to protect this population from further decline and preserve options for its recovery. But the White River population is essential for recovery and is even more important to protect and recover.

The 5-year average production for unmarked juvenile Chinook salmon migrating out of the Puyallup River is 35,839 individuals (Berger et al. 2013, p. 20). Over the past 8 years, annual production of unmarked juvenile Chinook salmon ranged from approximately 10,000 individuals in 2009 to 90,000 in 2008 (Figure 4). Outmigration of juvenile Chinook salmon occurs from early February through the end of August.

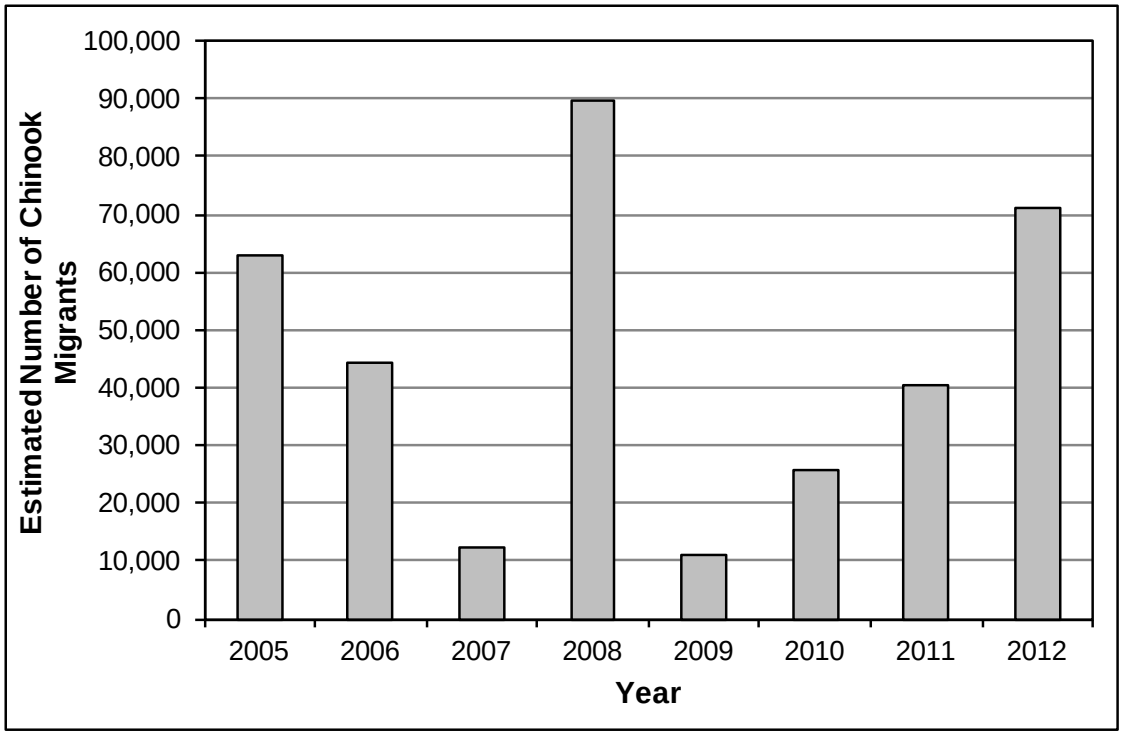

Figure 4. Annual production estimates of unmarked juvenile Chinook salmon 2005-2012.

Puget Sound Chinook Salmon Critical Habitat

NMFS designated critical habitat for Puget Sound Chinook salmon on September 2, 2005 (70 FR 52630). The project area is designated critical habitat. The following three of the six PCEs of Chinook salmon critical habitat may be affected from the project:

- PCE #1: Freshwater spawning sites with water quantity and quality conditions and substrate supporting spawning, incubation and larval development.

- PCE #2: Freshwater rearing sites with water quantity and floodplain connectivity to form and maintain physical habitat conditions and support juvenile growth and mobility; water quality and forage supporting juvenile development; and natural cover such as shade, submerged and overhanging large wood, log jams and beaver dams, aquatic vegetation, large rocks and boulders, side channels and undercut banks.

- PCE #3: Freshwater migration corridors free of obstruction with water quantity and quality conditions and natural cover such as submerged and overhanging large wood, aquatic vegetation, large rocks and boulders, side channels, and undercut banks supporting juvenile and adult mobility and survival.

Puget Sound Steelhead

Puget Sound steelhead were listed as threatened on May 11, 2007 (72 FR 26722). This species exhibits a complex suite of life-history traits. Resident individuals, commonly called rainbow trout, complete their lifecycle completely in freshwater. Anadromous individuals, or steelhead, may reside in freshwater for up to 7 years before migrating to the ocean for 1 to 3 years. Under some circumstances, individuals/pairs of one life history form apparently yield offspring of the opposite life-history form (i.e., steelhead offspring become resident rainbow trout, and resident rainbow trout offspring become anadromous steelhead). In contrast with other species of Pacific salmon, this species is iteroparous or capable of repeat spawning.

The winter steelhead stocks in the Puyallup basin have been declining since 1990. Factors responsible for the decline in steelhead escapement are unknown, especially when other salmon species are experiencing relatively good success. Escapement numbers at the Corps' fish trap-and-haul facility in Buckley during 2006 (137 adults) was the lowest ever recorded since 1941. Escapement numbers between 1998 and 2013 ranged from 137 to 564 (Figure 5). South Prairie Creek averaged 150 redds annually (range 93 to 196) from 1999 to 2004; however, only 44 redds were observed in 2005. Escapement increased in 2006 and 2007 based on the number of redds observed (148 redds in 2006 and 219 in 2007).

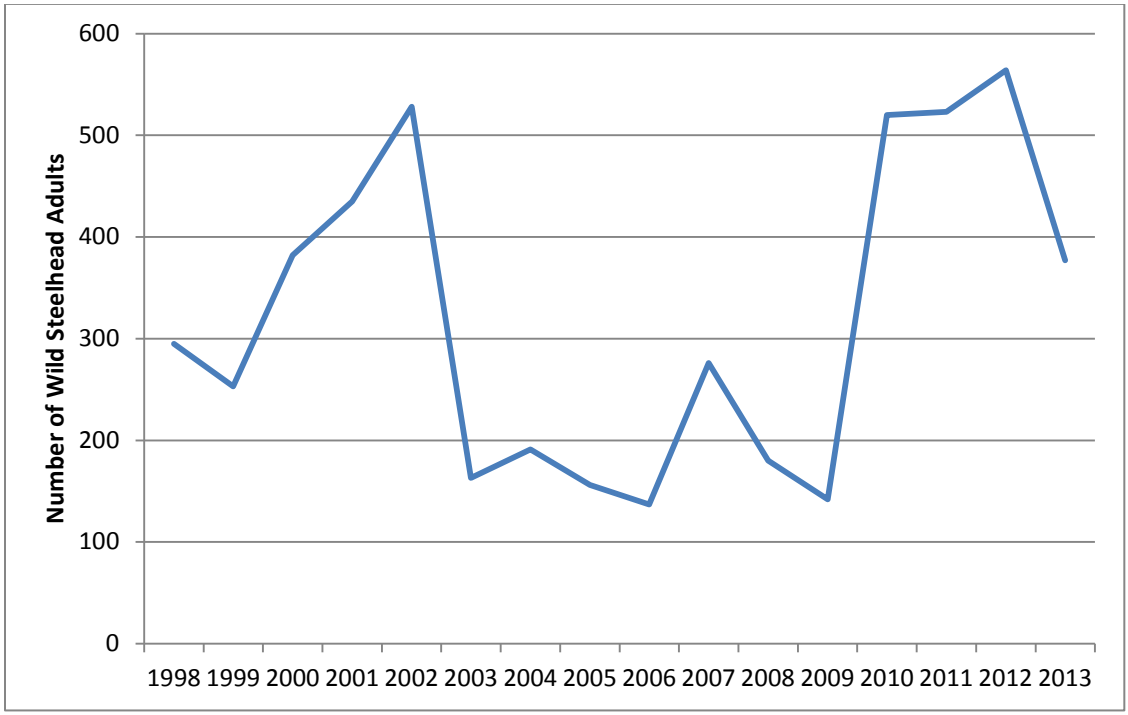

Figure 5. Number of wild adult steelhead caught at the Buckley diversion trap and haul facility between 1998 and 2013.

During the spring of 2006, in response to the declining number of winter steelhead, the Puyallup and Muckleshoot Tribes, as well as WDFW, began a supplementation pilot project for the White River. The primary goal of this project is to restore the run to a strong self-sustaining population. The pilot project utilized captured wild brood stock from the Corps' trap in Buckley

to generate approximately 35,000+ yearling smolts. The success or failure of this project will likely determine if an additional supplementation program will be implemented on the Puyallup River. Adult steelhead numbers have increased at the Buckley diversion since 2006 and the pilot project (Figure 5).

In 2000, the Puyallup Tribal Fisheries Department started the Puyallup River Smolt Production Assessment. Since 2000, a 5-foot-diameter rotary screw trap located on the Puyallup River at RM 10.6 has been used to estimate juvenile production. Twenty-five unmarked steelhead were caught in the smolt trap in 2007 and 656 were caught in 2012 (Figure 6) (Berger et al. 2013, p 41). A larger screw trap was used in 2012 which may account for the larger number of steelhead caught. No production estimates were completed for steelhead migrants (Marks et al. 2009, p. 96).

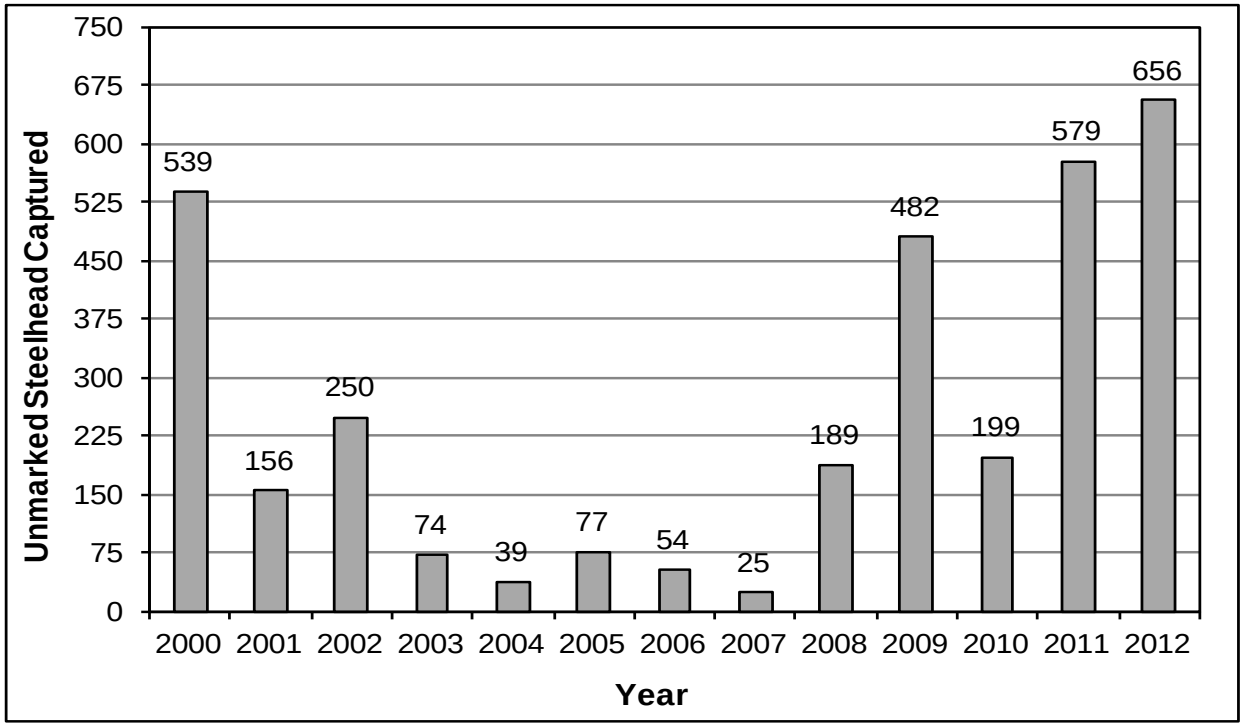

Figure 6. Total number of unmarked steelhead captured in the Puyallup River screw trap, 2000 - 2012.

Puget Sound Steelhead Proposed Designated Critical Habitat

NMFS proposed designation of critical habitat for Puget Sound steelhead on January 14, 2013 (78 FR 2726). The project area is designated critical habitat. The following three of the six PCEs of Puget Sound steelhead proposed critical habitat may be affected from the project:

- PCE #1: Freshwater spawning sites with water quantity and quality conditions and substrate supporting spawning, incubation and larval development.

- PCE #2: Freshwater rearing sites with water quantity and floodplain connectivity to form and maintain physical habitat conditions and support juvenile growth and mobility; water quality and forage supporting juvenile development; and natural cover such as shade, submerged and overhanging large wood, log jams and beaver dams, aquatic vegetation, large rocks and boulders, side channels, and undercut banks.

- PCE #3: Freshwater migration corridors free of obstruction with water quantity and quality conditions and natural cover such as submerged and overhanging large wood, aquatic vegetation, large rocks and boulders, side channels, and undercut banks supporting juvenile and adult mobility and survival.

Bull Trout and Chinook Recovery Plan Actions

In analyzing the project and providing recommendations to benefit the fish and wildlife resources, the FWS reviewed the bull trout and Chinook salmon Recovery Plans. Both plans identified reasons for the decline of the species and provided recovery actions that would reduce threats to the species and provide habitat and access that benefits both species. Actions to improve bull trout and Chinook salmon habitat will also benefit other aquatic species.

The Bull Trout Recovery Plan notes several factors contributing to a reduction in the overall productivity of bull trout in the Puyallup core area (USFWS 2004, pp. 164-171). These factors include: extensive timber harvest and associated road construction; conversion of landscape to residential, commercial, and agricultural use; substantial channelization of lower mainstem reaches; and complete commercial development of the estuarine and nearshore marine habitat. Recovery actions that pertain to the Puyallup River Basin include the following. Specific recovery actions are provided in Appendix C.

- Maintain and improve water quality.

- Restore impaired stream channel and riparian areas.

- Identify upland conditions negatively affecting bull trout habitats.

The Puget Sound Chinook Salmon Recovery Plan identifies habitat as a major factor affecting Chinook salmon populations within the project area. Specific text associated with habitat modifications identified in the Chinook Recovery Plan is as follows (NMFS 2007, p. 75):

> "Extensive dredging, diking and filling for flood control and development beginning in the early 1900s eliminated and degraded miles of salmon habitat. One area hard hit by major floodplain modification was in south Puget Sound where the Puyallup, White and Carbon Rivers are all contained within a revetment and levee system for their lower 26, 8 and 5 miles respectively. These channel containment structures have removed the natural sinuosity of the rivers and the spawning and rearing habitats that were once present. Dikes, levees, and channelization beginning in 1906 reduced the length of the Puyallup River from its mouth to the confluence with the White River by 1.84 miles, a loss of almost 15 percent of its channel length in that section alone. Levee structures eliminated connections with side-channel and off-channel habitat."

Other factors limiting Chinook salmon in the Puyallup River watershed include impaired riparian functions and condition and floodplain process and off-channel habitat (NMFS 2007, p. 278). Habitat in the lower reaches of the Puyallup River is fragmented and disconnected. Only about 5 percent of the riparian habitat is rated as high quality. The loss of floodplain processes and off-channel habitat along the Puyallup, White, and Carbon Rivers limits spawning and rearing habitat.

Mainstem spawning by Chinook salmon in the Puyallup basin has declined markedly over the past two decades (Ladley, Puyallup Tribe, pers. comm., 2013). Channelized reaches accelerate flows that scour and result in altered hydraulic conditions that degrades redd suitability and the vital oxygen and flows necessary to sustain a redd and the eggs and alevins they contain for successful hatching, incubation and emergence.

The Chinook Salmon Recovery Plan has specific technical recovery actions for the different rivers within Puget Sound. The Chinook Salmon Recovery Plan identifies the following as significant habitat factors limiting Chinook salmon: fish access to spawning and rearing habitat being limited by dams, flood control diversion, dikes, and stream channelization projects; modified sediment transport; lack of estuarine and nearshore habitat; contaminated sediments; flow diversions reducing spawning and rearing habitat and disruption of the migratory corridor; water quality impacts due to development; impaired riparian functions and condition including lack of large woody debris (LWD) and stream channel instability; and loss of floodplain processes and off-channel habitat (NMFS 2007, pp. 276-277). To address these issues, the recovery plan recommends the following priorities for habitat restoration:

- Setback levees and floodplain reconnection
- Restore riparian and habitat diversity through plantings and installing large woody debris.

DISCUSSION

The No Action Alternative

Under the No Action Alternative, no Federal actions would be conducted to minimize or reduce flood risks within the Puyallup River Basin or improve fish and wildlife habitat within the watershed beyond those currently in place. The Corps' and Pierce County's current flood management practices would continue. Some of these continuing practices include management of woody material on an as needed basis during emergencies, repair of levees to existing conditions with limited soft or bioengineered practices, no new levees would be built, 550 ft of levees would be setback, and no property acquisition would occur (Pierce County, 2012, pp. 11-25).

The No Action Alternative would continue the existing water quality, aquatic and terrestrial habitat, and fish and wildlife resource conditions described above. The existing levee system would continue to impact the hydrology and natural river processes that are limiting within the watershed.

The FWS does not support the No Action Alternative in its entirety as the continued flood management practices within the Puyallup River Basin are detrimental to the aquatic environment and are contrary to the recovery of the federally listed species.

Potential Impacts of the Two Proposed Action Alternatives

The effects of implementing the no action alterative versus the two proposed action alternatives on fish and wildlife species would be dependent on the combination of activities that would be implemented under the alternative chosen. Both action alternatives contain measures that are detrimental to the natural processes within a river system, impact fish and wildlife species within the watershed, and are not consistent with the recovery goals and actions for both bull trout and Chinook salmon. Alternative 2 does include some measures that would benefit the stream system and recovery goals, but additional details of each of the measures are needed to determine whether the alternative would benefit the fish and wildlife resources and the recovery of bull trout, steelhead, and Chinook salmon. For example, knowing whether levee setbacks would include or allow riparian vegetation establishment along the river, the management goals of property acquisition land, and how close the new levees are constructed to the river will determine the overall effect of Alternative 2 to the Puyallup Watershed and the fish and wildlife dependent on it.

Rivers, as they flow from headwaters to their mouth, are a source of energy that shape and form the river channel and its watershed. As a river flows downstream, it naturally erodes banks and deposits sediment. As a river erodes sediment from its banks, usually on outside of meander bends, it deposits sediment elsewhere, usually on the inside of meander bends or in pools. Bank erosion and river meandering are the basic forces for riverine ecological processes and functions (USFWS 2000, p. 7).

The river's hydrology plays a critical role in developing and sustaining the river system. Natural flows vary on scales of hours, days, seasons, and years (Poff et al. 1997, p. 770). At base flow, the river is in a well-defined channel. The energy within the river is at its lowest point and little to no erosion occurs and little sediment is transported. As water levels rise due to local precipitation or from seasonal runoff such as snow melt, the energy within a stream increases. Maximum channel formation and erosion occurs at bankfull discharge levels (Poff et al. 1997, p. 772). Bankfull discharge is the flow which just fills the channel to the tops of the banks and begins spilling onto the floodplain (Williams 1978, p. 1141). As water levels exceed bankfull discharge, the river flows onto the floodplain, resulting in energy dissipation and sediment deposition on the floodplain.

Floodplains are vital to a stream system. Floodplains are the transition zones between the aquatic and terrestrial environment (Junk et al. 1989, p. 112). They are defined as the area flooded by a 100-year flood (Junk et al. 1989, p. 112). Floodplains provide a variety of functions for both aquatic and biological resources (Wright 2008, pp. 8-2). For the aquatic resource, floodplains provide flood storage and conveyance, as well as, reduce flood velocities, flood peaks, and sedimentation. Floodplains also filter nutrients and impurities from runoff, process organic wastes, moderate temperatures of water, promote groundwater infiltration and aquifer recharge, and reduce the frequency and duration of low surface flows. For the biological resources, floodplains support a high rate of plant growth, maintain biodiversity and integrity of

ecosystems, provide breeding and feeding grounds for fish and wildlife, and protect habitat for rare and endangered species. Riparian areas, also part of the floodplain, are located along the river's bank and provide the following functions (Cunningham et al. 2009, pp. 2 - 3):

- Sediment and pollutant removal – Sediment, chemicals, and other pollutants are removed before entering the stream or other waterbodies.

- Aquatic habitat – Riparian vegetation is a source of food and structural habitat for aquatic organisms. LWD, such as fallen trees and limbs, provided complex habitat for terrestrial invertebrates (prey organisms for fish).

- Bank stability and erosion protection – Vegetation stabilizes stream banks and reduces bank erosion. Roots bind the soil together. Reduction in stream erosion maintains the streams depth and width.

- Alteration of stream climate – Riparian vegetation reduces stream temperatures and increases oxygen levels.

- Wildlife habitat – Riparian areas are transitional zones that can provide a variety of habitat from flooded, wet areas to extremely dry areas that contain a diverse community of mammals, amphibians, birds and reptiles. Riparian areas can provide travel corridors linking different habitats.

Anthropogenic activities in a river, such as construction and maintenance of levees and dredging, stop or alter the natural processes within a stream. This includes stopping or minimizing bank erosion, reducing sediment supply, impeding channel migration, increasing thalweg depth and flow velocities through channel constriction, decreasing LWD recruitment, decreasing pool area, decreasing riffle area, reducing connectivity to the floodplain, removing riparian vegetation, and altering flow and scour patterns (USFWS 2000, pp. 9-10, 28; WDFW 2007, pp. 7-17; Whiteway et al. 2010, pp. 832-833; Gidley et al. 2012, p. 554).

The overall outcome of bank stabilization structures and dredging is a stream with a simplified, smooth, hydraulically efficient surface (USFWS 2000, p. 9-10; WDFW 2007, pp. 9-22; Gidley et al, 2012, p. 563; Pess et al. 2012, p. 872). This results in a uniform gradient stream with increased velocities especially with the resulting increased stream discharges. The river no longer erodes laterally, which eliminates LWD input into the stream (USFWS 2000, p. 28). Also, the river no longer has the ability to hold LWD in place due to the loss of riparian habitat and the simplified, smooth surface.

The increased flow that results from the simplified channel causes additional impacts. First, the increased discharge and velocities cause the bank stabilization structure to fail, which results in the continued maintenance or repair of the structure (FEMA 2009, p. 9). Second, bank stabilization results in impacts at other points of the river, including reaches upstream,

downstream, and across the channel (USFWS 2000, pp. 9-10; Stein et al. 2013, p. 781). Therefore, the installation of one bank stabilization structure results in the need for additional structures (USFWS 2000, pp. 9-10) and continued repairs of existing structures.

Bank stabilization structures, including associated construction activities, alter the chemical processes within a river. The installation of bank stabilization structures usually involves removing riparian vegetation to access the bank and clearing, grubbing, and grading the bank to install armor rock or other hardening structures. Removal of mature riparian vegetation eliminates the source for LWD, decreases leaf litter and detritus input, increases algae production, and reduces nutrient exchange if the river overtops the bank and flows onto the floodplain (USFWS 2000, pp. 9-10; Pracheil 2010, pp. 2-3; Tomlinson et al. 2011, p. 1654). Simplification of stream channels decreases instream transient storage capabilities of a stream reach and nutrients are flushed through the system faster (Ensign and Doyle 2006, p. 3). Removal of the riparian vegetation increases solar input to a stream and increases water temperatures both in the summer and winter (Fischenich 2000, pp. 8, 18). Increased stream temperatures can impact key life-history characteristics of aquatic species.

Removal of riparian vegetation impacts wildlife species by fragmentation of habitat and removal of trees and downed timber. Loss of riparian habitat decreases species diversity, disrupts wildlife migration, reproduction and rearing, reduces prey source and abundance (Southeast Aquatic Resources Partnership 2013).

The effects of the proposed action on wildlife species, including proposed and listed species, are difficult to evaluate due to the lack of information regarding the proposed actions associated with each of the alternatives. For example, new levees will result in the loss of riparian habitat that is important to wildlife. Property acquisition and setback levees have the potential to improve habitat for wildlife species by increasing riparian habitat and reducing habitat disturbance (i.e., eliminating levee maintenance). However, unless or until additional information is provided, we are unable to adequately address the effects of the proposed alternatives to wildlife within the action area.

The biological response to bank stabilization structures varies depending on the design and type of structure constructed, the extent of bank stabilization, and the biota and their life history stages. Riprapped banks result in the loss of LWD and increased stream velocities. If stream velocities become too strong, reaches of rivers can become barriers to upstream fish passage (WDFW 2007, pp. 7-18).

Fish use and densities were found to be lower at riprapped sites (USFWS 2000, pp. 15-16). The loss of bank erosion reduced the input of gravels into the stream and with high stream velocities at the riprap site, salmon spawning habitat was lost (USFWS 2000, p.12; Schmetterling et al. 2001, p. 8).

Streambank stabilization projects, especially on an undisturbed or undeveloped reach of a river, can cause the need for more protection along the river, both adjacent to the disturbed area or further downstream (WDFW 2003, pp. 1-6). This continues to degrade fish habitat, diversity, and complexity. As more of a stream is modified with bank stabilization structures, the river has reduced aquatic species diversity and biomass (Gidley et al. 2012, p. 563).
Incorporating LWD into bank stabilization structures improves fish habitat while still stabilizing the stream bank. Fish densities are positively correlated with LWD (USFWS 2000, pp. 15-16). The LWD also traps and retains gravels in the stream that benefit salmonid spawning (Schmetterling et al. 2001, p. 8). Stabilized banks that incorporate LWD and other vegetation provide habitat for multiple age classes and different life history stages (Schmetterling et al., p. 10).

Dredging alters stream velocities through changes in channel geometry such as deepening, narrowing, or straightening (WDFW 2007, pp.7-18). Dredging may not only result in increased stream velocities, but may also reduce velocities by creating deep pool habitats. These flow reductions result in deposition of fine sediment, which causes a decrease in natural sediment transport rates, and also disconnects the downstream reaches from important sources of sediment, nutrients, woody debris, and organic nutrients (WDFW 2007, pp.7-18). Dredging in river systems may also result in head cutting as in-stream erosional processes move upstream, especially into tributaries (Freedman et al. 2013, p.262).

The biological response to dredging also depends on the life-history stage present or that use the dredged reach. Fish and invertebrates require certain flows, depths, and substrates for spawning, rearing, and foraging. Dredging alters the channel geometry and can decrease spawning, rearing, and foraging opportunities for salmonids. The loss of substrate, shallow water, and LWD can increase predation on juvenile salmonids (Freedman et al. 2013, p. 262).

Evaluation and Comparison of the Alternatives

The FWS was not provided an adequate description of the alternatives and the associated actions to fully evaluate each alternative. Based on the information provided to the FWS, we do not support either action alternative in its entirety.

Alternatives 2 and 3 contain measures or actions (e.g., dredging, new levees, sediment traps, and flow deflectors, etc.) that can be detrimental to the natural processes and fish and wildlife within the Puyallup River watershed. Neither alternative is consistent with the recovery goals of bull trout and Chinook salmon. With the overall purpose of the project to investigate and recommend solutions to reduce flooding in the Puyallup watershed, it is very difficult to develop alternatives that meet the purpose of the project and not negatively impact the biological resources within the river.

Many of the actions in both alternatives use flood control practices that are not only damaging to fish and their habitat, but have little or no flood reduction values. This includes the new levee to protect State Route 410. Single purpose flood management practices, like those that have been used in the past and are currently proposed (i.e., dredging), do not take into account the natural

physical processes of a river and the impacts to fish, especially listed salmonids. We recommend that these measures not be considered as future flood management strategies within Washington river systems.

Many of the measures identified in both alternatives will result in long-term maintenance actions that will result in continued impacts to the aquatic and terrestrial resources. Dredging and sediment traps are only short-term solutions while setback levees provided the best long-term flood protection (Czuba et al. 2010 p. 82). Maintenance activities to remove accumulated sediment will further degrade salmon critical habitat.

The FWS supports those elements of the proposed actions that would minimize impacts to fish and wildlife, such as property acquisitions and levee setbacks that include stream restoration, and bank stabilization activities to increase habitat complexity. However, the FWS does not support new levees that are adjacent to the river and disconnect the river from its floodplain and remove riparian habitat. The FWS also does not view dredging as compatible with salmonid recovery or as a long-term solution to flooding issues.

Development within the Puyallup watershed began over 100 years ago. Population growth and land development within the watershed has resulted in the increased potential for urban flooding. Land development results in increased impervious surfaces that decreases infiltration and increases runoff entering the streams. Transportation infrastructure constricts rivers at bridges and measures to protect roads and bridges results in the need for bank protection to prevent erosion. Agricultural, residential, and industrial development occurs on the floodplain, which results in levee and revetments to protect these land uses. Rivers are modified to prevent erosion and flooding. Rivers no longer function in their natural state. The energy within a modified river increases resulting in damage to the same structures that are constructed to constrain the river.

Of the two alternatives under consideration, Alternative 2, Levee Modifications, provides some benefit to the natural river processes within the watershed. This alternative includes approximately 4.4 miles of levee setback measures on the lower Puyallup River sub-basin. These measures will provide important floodplain function that is currently lacking. This proposed levee setback along the right bank of the highly developed lower Puyallup River sub-basin would minimize the channelization impacts of the river and provide estuarine, brackish water, and off-channel habitat for juvenile and adult salmonids migrating through the system.

Both alternatives include property acquisition measures to acquire land that experiences repetitive flooding. Two areas, one on the lower White River sub-basin (Alternative 2), and one on the Carbon River sub-basin (Alternatives 2 and 3), are being considered for acquisition. Purchasing and managing the land for flood control will reduce costs associated with flood damage as well benefit the river system if the property is restored to provide lost river functions and increases flood capacity.

Both alternatives also include construction of new levees or levee improvements (strengthening and increasing the levee height) that will further restrict the channel and reduce the natural processes within the stream. Alternative 2 includes the construction of 9.2 miles of new levees and 17 miles of levee improvements. Alternative 3 includes construction of 5.9 miles of new

levees and 10.1 miles of levee improvements. Construction of new levees and increasing the strength and height of existing levees will result in a further channelized stream system that will continue to be damaged by high flows, will need continued maintenance and repair, and will likely trigger the need for additional bank stabilization structures as the river's erosional forces increase and cause additional levee failure and flooding throughout the action area.

Alternative 3 includes 10 miles of river dredging and the installation of two sediment traps (also in Alternative 2), one on the upper White River sub-basin and one on the upper Puyallup River sub-basin. These actions would significantly alter the sediment budget and transportation within the Puyallup and White Rivers. Sediment removal will result in loss of macroinvertebrate production and salmonid spawning and rearing substrate. Sediment removal does not only impact the river at the point of withdrawal, but also affects the whole system; upstream of the point of removal down to the mouth and estuary of the river. The removal of sediment from a river system, results in a river being out of balance between its flow and its sediment load. Therefore, to try and reach equilibrium, the river will erode its bank or bottom substrate. Sediment upstream can cause significant erosional concerns downstream.

Recommendation

Flood management proposals should include large scale property acquisitions that will support natural stream processes such as channel migration and riparian and floodplain reconnection. Property acquisitions should be prioritized to target repetitive flooding and damaged areas and large setback projects. Only two levee setback projects have been completed in the Puyallup basin and total only 16,000 feet (3 miles) in length (Ladley, Puyallup Tribe, 2013, pers. comm.). Many more setback projects are necessary to achieve the large-scale effect necessary to restore channel length and provide functional riparian conditions, floodplain storage, and measureable flood reduction benefits.

The FWS provides the following recommendations to protect and enhance fish and wildlife resources in the project action area: The recommendations were developed in coordination with NMFS, WDFW, and the Puyallup and Muckleshoot Tribes. The FWS understands that some of the following recommendations are beyond the authority of the Corps. However, the Corps should work with Pierce County, as the non-Federal sponsor for the project, and the local stakeholders that will benefit from the flood reduction actions to address these recommendations:

1) Develop a riparian management plan for the Puyallup River system. The plan should include descriptions of where riparian trees and large woody debris can be established at locations with and without setback levees.

2) Develop a watershed level sediment budget and management plan for the Puyallup River to determine and address sediment loads and water diversions within the watershed. A sediment budget will help determine restoration opportunities within the watershed (e.g., braided vs unbraided channel, where LWD may be placed to benefit salmon spawning, etc.).

3) Develop and adopt plans on development within the Carbon and White River watersheds. Extensive new development continues within the floodplains of the Carbon and White Rivers that further constricts the rivers and increases flooding potential. Approved plans to control development within the watersheds are needed.

4) Designate channel migration zones within the Puyallup River watershed to protect and control development within the floodplain. Migration zones should be developed based on historic migration rates prior to bank hardening, and on the timeframe necessary for growth of key-piece LWD.

5) Develop mitigation plans for the PL 84-99 Program to offset emergency repair of levees. The current program repairs levees during emergencies resulting from flood events, but no mitigation is required to offset impacts to fish and wildlife. A mitigation plan, such as in lieu fees, would provide long-term mitigation for emergency repairs.

6) Require all new development and re-development to use low impact development. Low impact development increases infiltration of stormwater and reduces runoff to rivers.

7) Avoid actions that may raise water temperatures. Temperatures in the lower White and Carbon Rivers do not meet Ecology water quality standards and further actions that would increase temperatures should be avoided including any actions that reduce existing and potential stream shade.

8) Proceed with property acquisitions and levee setbacks that include stream restoration and bank stabilization activities to increase habitat complexity.

9) Conduct a watershed analysis to determine where stream restoration activities can occur to maximize habitat gain for listed salmonids. Watershed analysis will provide mitigation options for future projects.

10) Consider engineered log jam installation to protect infrastructure instead of constructing new levees.

11) When setback levees are constructed, existing levees should be breached and can be left in place if the remaining levee consists of natural, alluvial material and fish stranding behind these levees does not occur. If not, compete removal of the old levees is required.

12) Threatened and potentially threatened roads should be moved away from the river(s) instead of installing bank stabilization structures to protect them. Resources spent on protecting a road over the long-term can exceed those of moving the road away from the river. Plans for bank stabilization structures along roads should document and establish the need for such work (i.e., use of road or benefit to a small number of residences).

13) Pierce County should develop a database of completed and proposed projects within the Puyallup River Basin that identifies the work completed, how funded, area of stream impacted, resource functions affected, and mitigation requirements for each project. Pierce County has numerous actions occurring within the basin and records need to be kept to describe the project and to verify appropriate credit is being issued for each action.

14) Surveys for occurrences of the yellow-billed cuckoo should be conducted for any action that may occur in areas with potential yellow-billed cuckoo habitat. Yellow-billed cuckoo habitat consists of large intact riparian habitat consisting o f willows and cottonwoods (FR 78 61622, October 3, 2013). The species is proposed for listing under the Endangered Species Act and surveys to determine whether the species or its habitat is located within the action area are needed.

15) The Corps should continue coordination with the FWS, NMFS, Tribes, and permitting agencies throughout the design of the Puyallup General Investigation to expedite ESA section 7 consultation and other permitting needs. Early coordination can: 1) provide opportunities for the FWS, NMFS, and pertinent agencies to suggest conservation measures for avoiding, reducing, and/or minimizing potential adverse effects to listed species; 2) identify design alternatives that can benefit recovery of listed species; and, 3) provide technical assistance on specific species habitat requirements that could be incorporated into the project.

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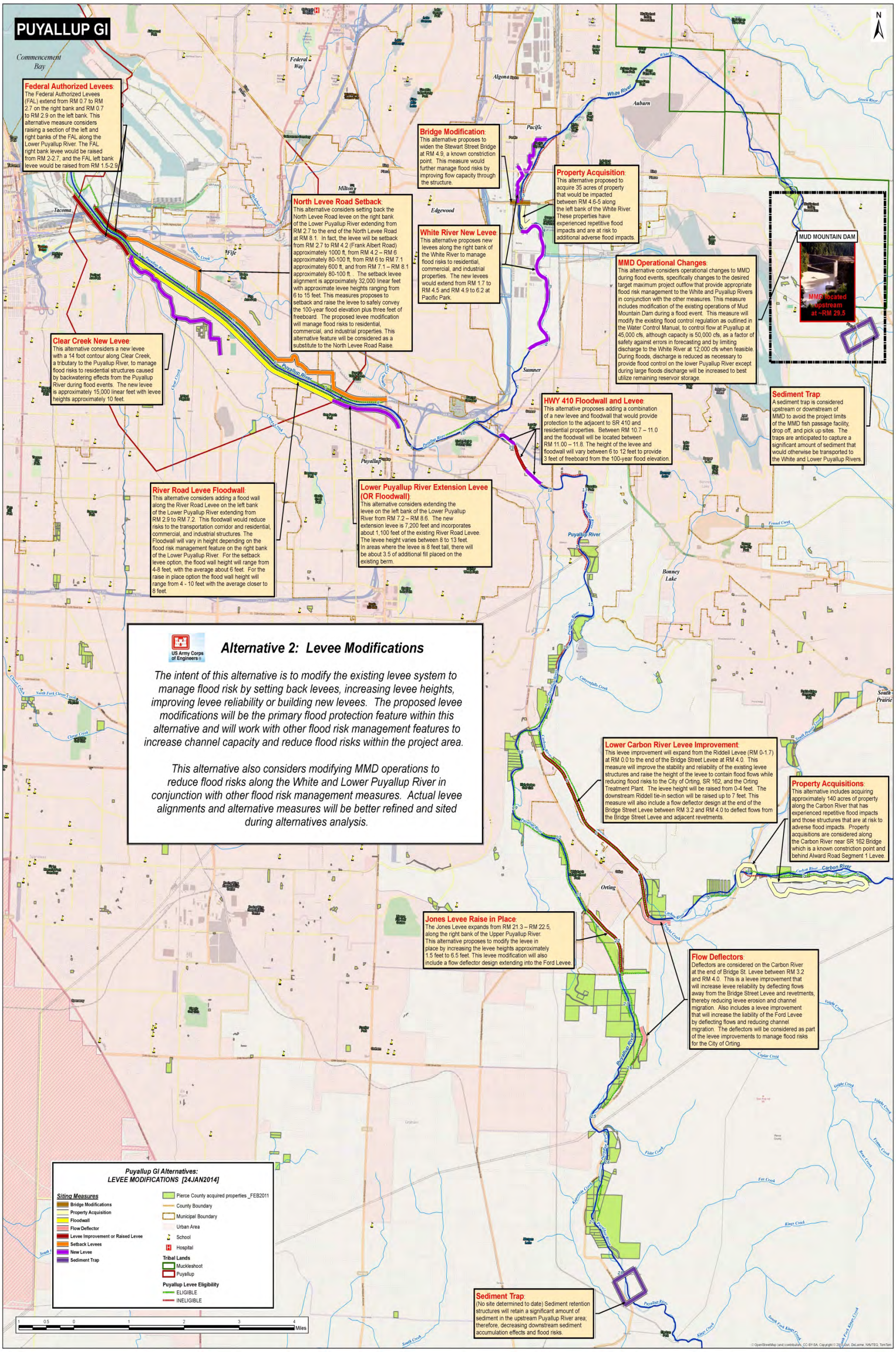
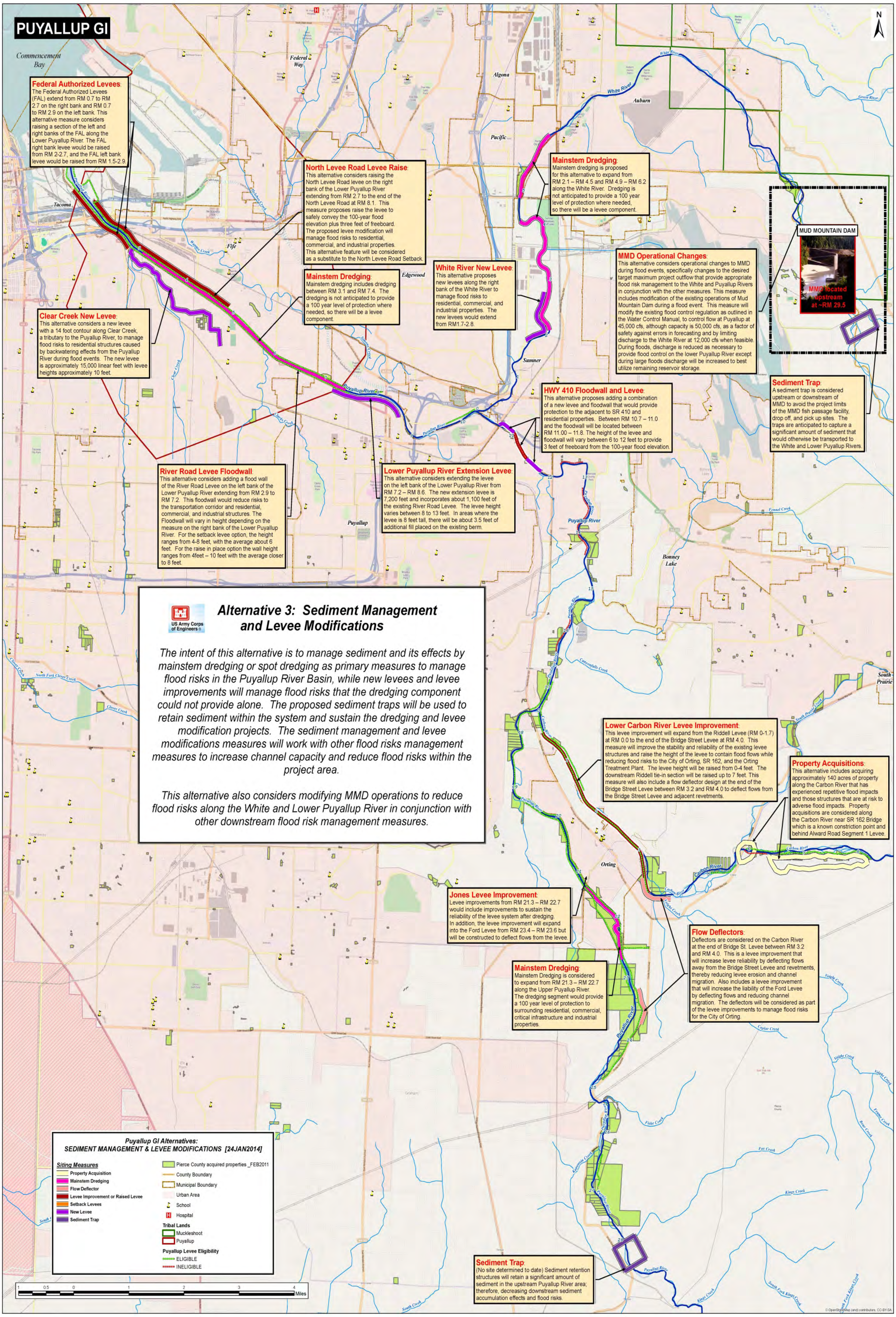
Appendix A: Alternative 2 – Levee Modifications



Appendix B: Alternative 3 – Sediment Management and Levee Modifications

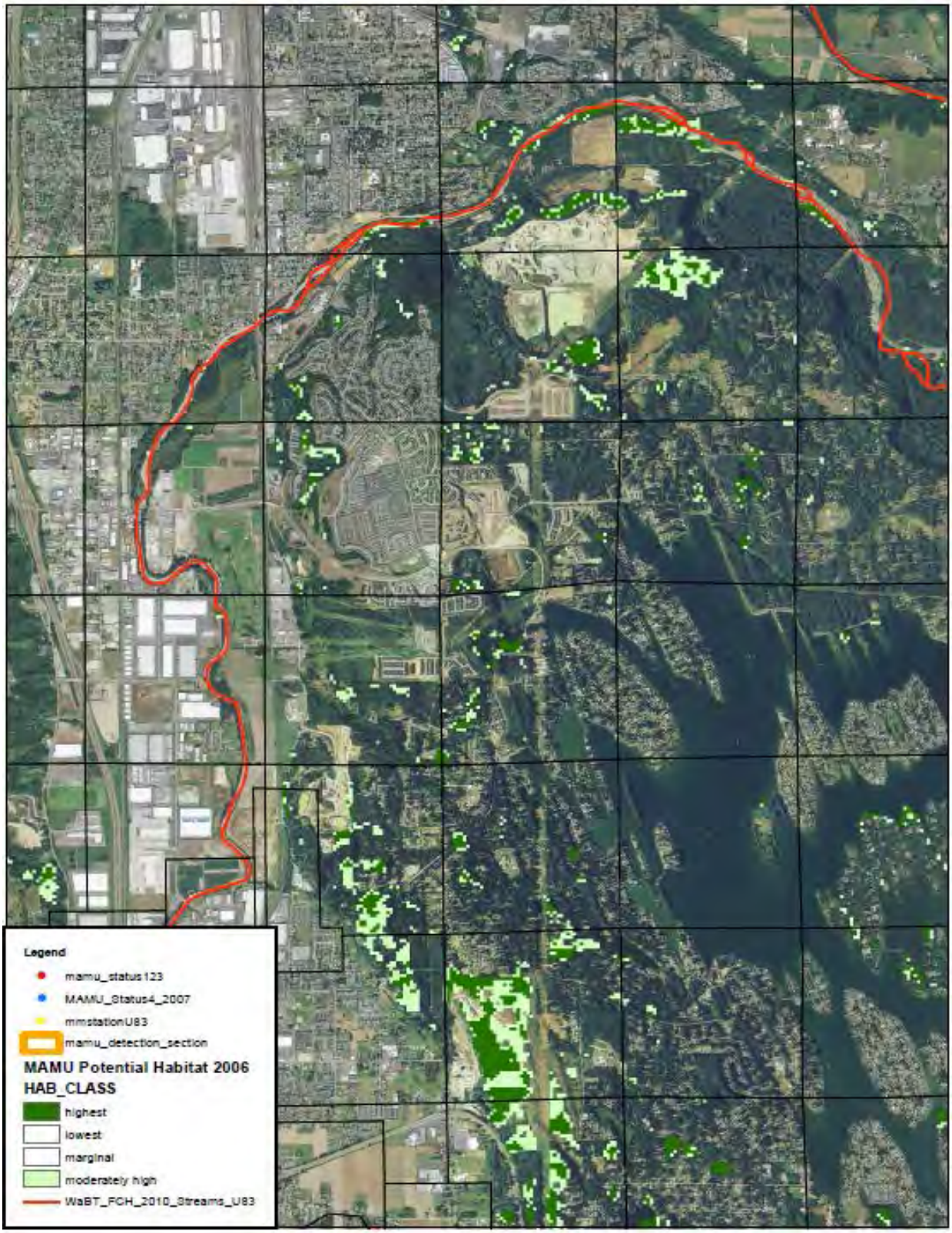


Appendix C: Birds and Mammals observed in the 2006 Bioblitz of the Lower White River

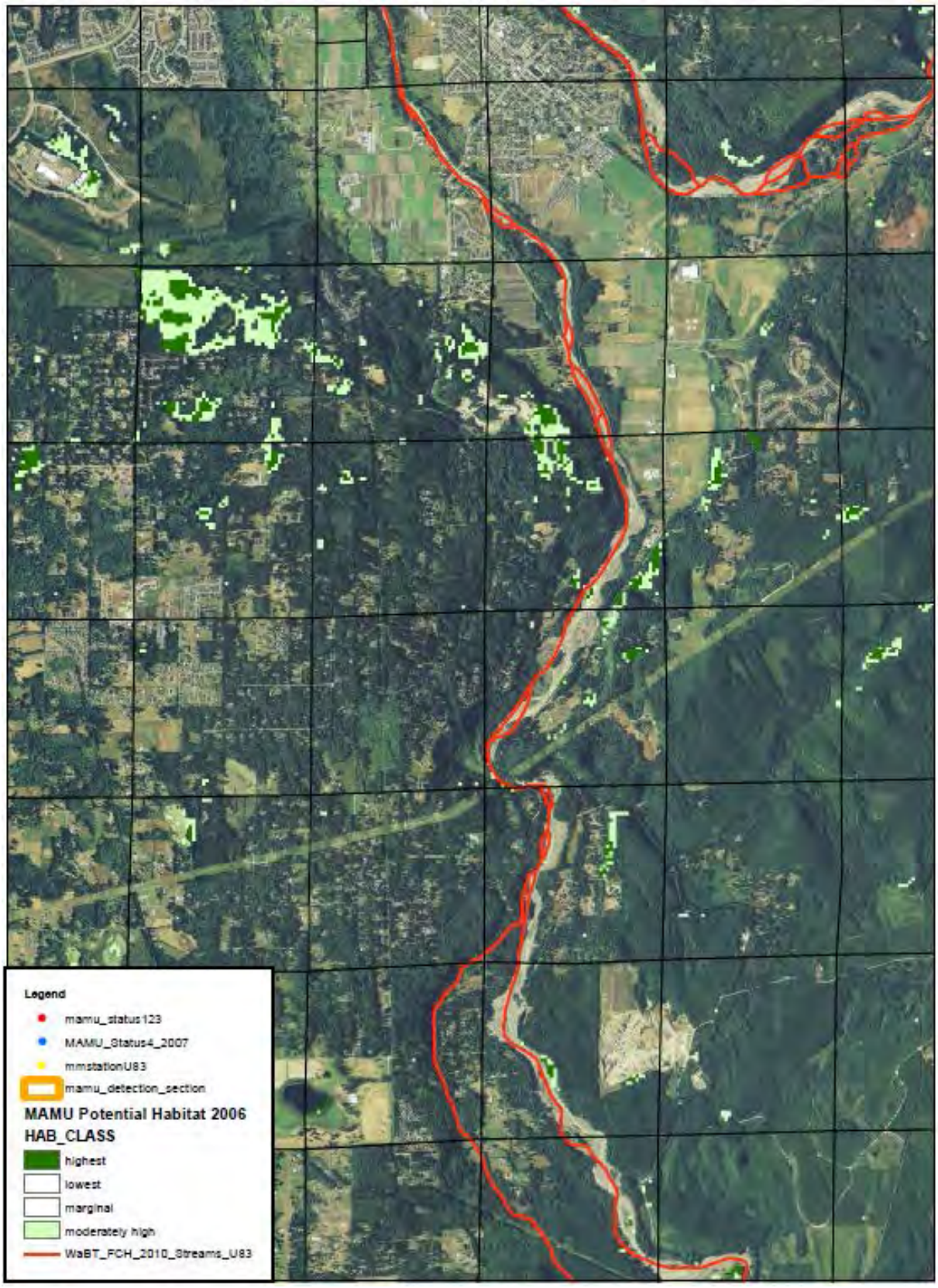
Occupied Habitat- Habitat that is suitable and currently occupied by the species.	**Occupied Habitat**- Habitat that is suitable and currently occupied by the species.	**Occupied Habitat**- Habitat that is suitable and currently occupied by the species.	**Occupied Habitat**- Habitat that is suitable and currently occupied by the species.	**Occupied Habitat**- Habitat that is suitable and currently occupied by the species.
Birds				
American crow		Cooper's hawk		Red-breasted sapsucker
American kestrel		Downy woodpecker		Red-tailed hawk
American robin		European starling		Red-winged blackbird
Bald eagle		Evening grosbeak		Rock dove
Band-tailed pigeon		Golden-crowned kinglet		Rufous hummingbird
Bank swallow		Great blue heron		Savannah sparrow
Barn swallow		Hairy woodpecker		Spotted towhee
Belted kingfisher		House finch		Steller's jay
Bewick's wren		House sparrow		Swainson's thrush
Black-capped chickadee		Hutton's vireo		Tree swallow
Black-headed grosbeak		Killdeer		Turkey vulture
Black-throated gray warbler		Lazuli bunting		Vaux's swift
Brewer's blackbird		Macgillivray's warbler		Violet-green swallow
Brown creeper		Mallard		Warbling vireo
Brown-headed cowbird		Marsh wren		Western meadowlark
Bushtit		Mourning dove		Western Tanager
Canada goose		Northern flicker		Western wood-pewee
Cedar waxwing		Northern rough-winged swallow		White-crowned sparrow
Chestnut-backed chickadee		Olive-sided flycatcher		Willow flycatcher
Cliff swallow		Orange-crowned warbler		Wilson's warbler
Common barn-owl		Pacific slope flycatcher		Winter wren
Common merganser		Pileated woodpecker		Wood duck
Common nighthawk		Pine siskin		Yellow warbler
Common raven		Purple finch		Yellow-rumped warbler
Common yellowthroat		Red-breasted nuthatch		

Occupied Habitat- Habitat that is suitable and currently occupied by the species.	**Occupied Habitat**- Habitat that is suitable and currently occupied by the species.	**Occupied Habitat**- Habitat that is suitable and currently occupied by the species.	**Occupied Habitat**- Habitat that is suitable and currently occupied by the species.	**Occupied Habitat**- Habitat that is suitable and currently occupied by the species.
Mammals				
Beaver		Eastern gray squirrel		Nutria
Big brown bat		Elk		Pacific jumping mouse
Black-tailed deer		Hoary bat		Raccoon
Bobcat		Little brown myotis		River otter
California myotis		Long-tailed deer mouse		Shrew spp.
Coast mole		Long-tailed weasel		Townsend's chipmunk
Coyote		Mole spp.		Townsend's vole
Deer mouse		Mountain beaver		Virginia opossum
Douglas squirrel		Muskrat		Vole spp.
Eastern cottontail		Norway rat		Yuma myotis

Appendix D: Potential Marbled Murrelet Habitat within and Surrounding Portions of the Project Area

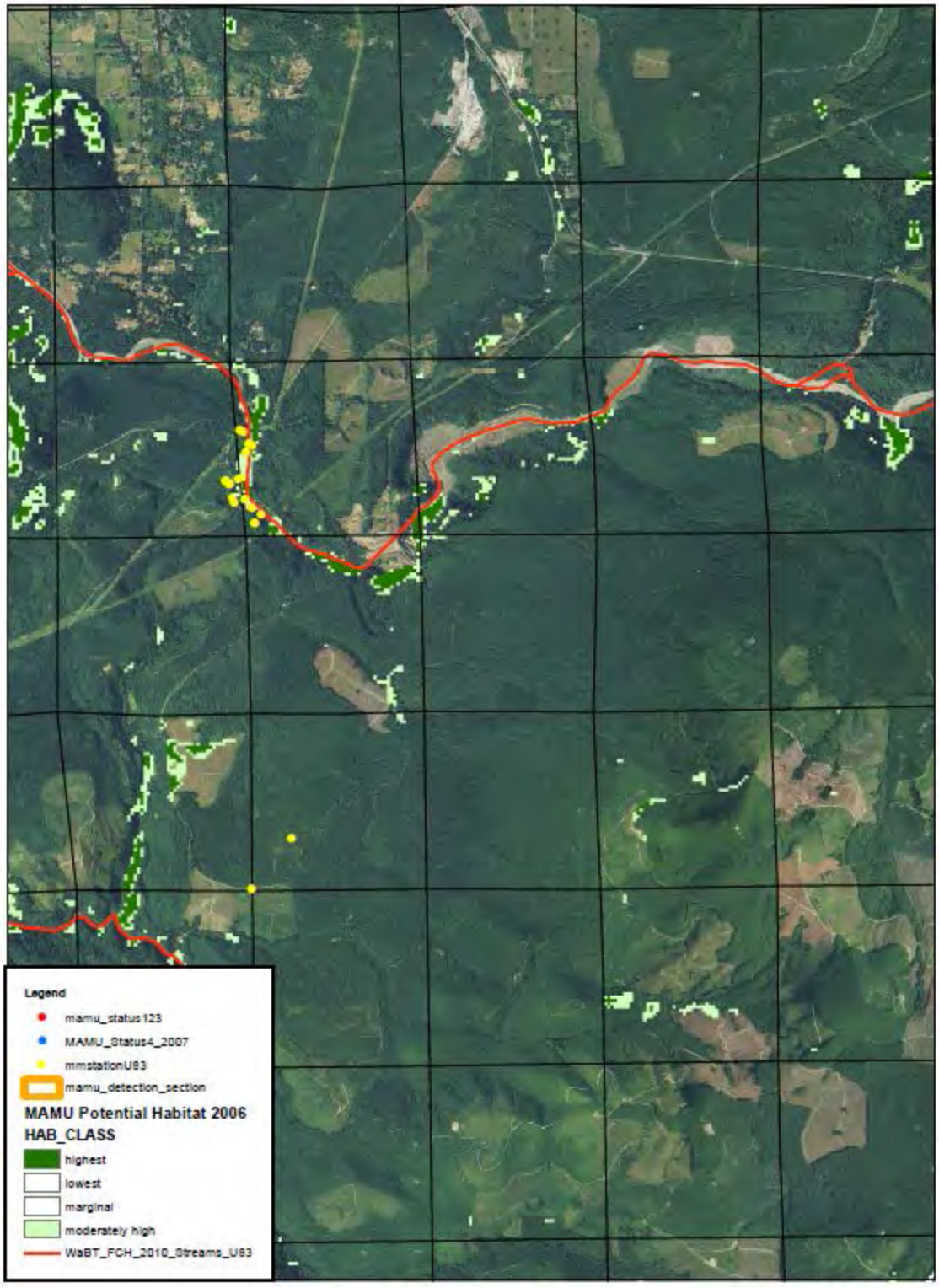


Potential marbled murrelet habitat surrounding the White River near Auburn.

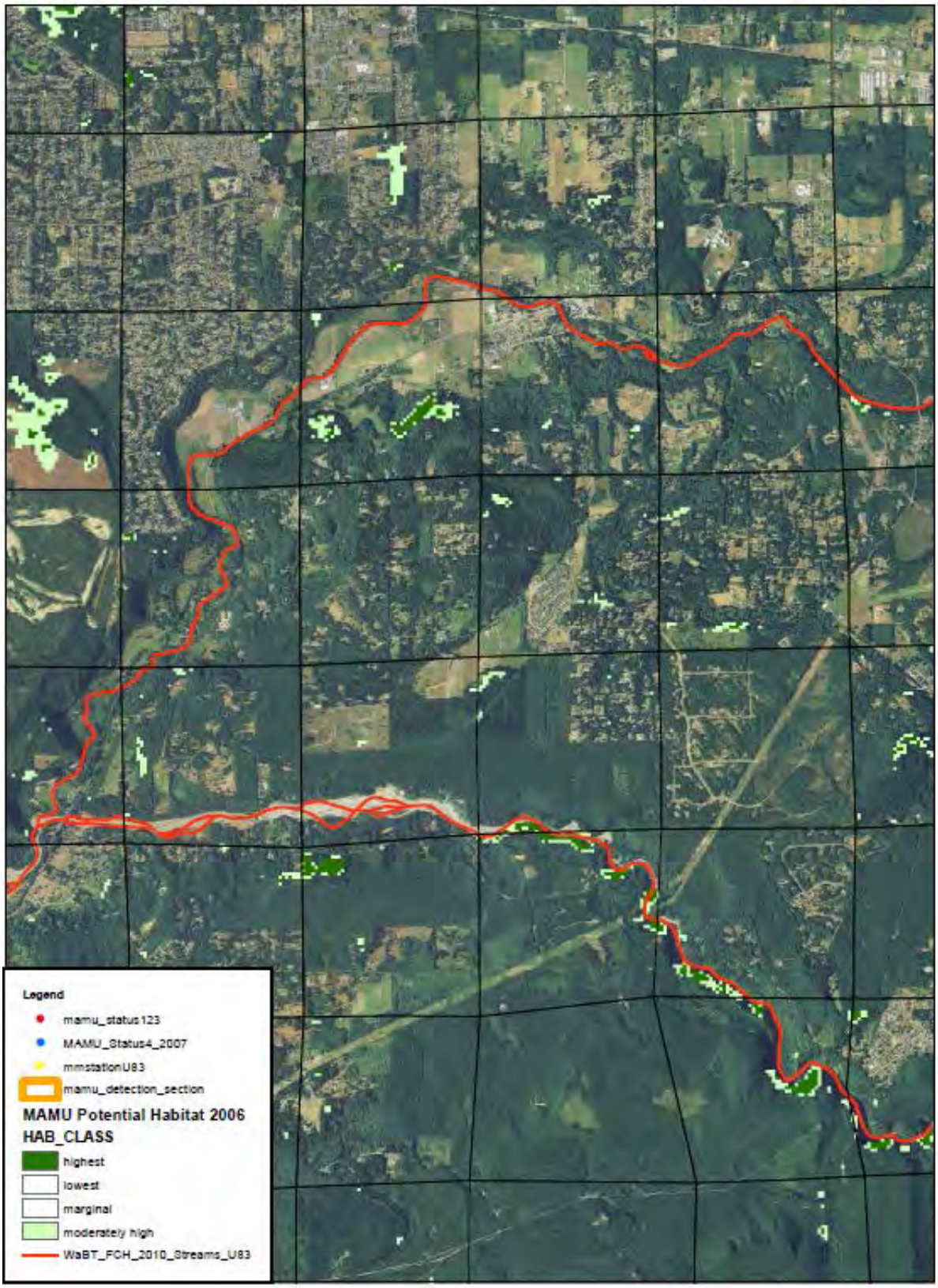


Potential marbled murrelet habitat surrounding the upper Puyallup River above Orting.

Potential marbled murrelet habitat surrounding the Puyallup River below the Carbon River and the lower portion of the Carbon River at Orting.



Potential marbled murrelet habitat surrounding the White River at Mud Mountain Dam.



Potential marbled murrelet habitat surrounding the Carbon River above Orting and the South Prairie Creek.

Appendix E: Specific Bull Trout Recovery Actions Identified for the Puyallup Core Area Related to this Project

1.1 Maintain or improve water quality in bull trout core areas or potential core habitat.

1.1.6 Monitor water quality and meet water quality standards for temperature, nutrient loading, dissolved oxygen, and contaminants. Implement additional water temperature monitoring on State, Federal, Tribal, County, City, and private lands. Identify and correct causes of temperature exceedences (e.g., riparian changes, hydrologic changes, debris flows) in bull trout spawning, rearing, foraging, and migratory habitat. Evaluate current minimum forest practice regulations for sufficiency in maintaining adequate riparian shading for maintaining water quality standards. Increase monitoring and enforcement of water quality standards and implement the Total Maximum Daily Load program. Water quality is an acute problem in many of the lower basin tributaries.

1.1.7 Identify, restore, and protect groundwater and hyporheic sources. Identify, restore, and protect groundwater and hyporheic sources and cold water refugia in local populations and in migratory and foraging habitats. Where forward looking infrared flights have occurred, protect identified refugia areas from ground or surface water withdrawals, and prioritize these areas for instream habitat improvements. Highest priorities for protection are those sources located in local and potential local populations and in critical migratory corridors and foraging areas, especially those that currently exceed water quality standards or have acute, chronic temperature problems.

1.3 Identify impaired stream channel and riparian areas and implement actions to restore their appropriate functions.

1.3.1 Restore and protect riparian areas. Identify impaired riparian areas and restore vegetative cover to provide shade, canopy, riparian cover, and native vegetation. Use results from State, Tribal, and U.S. Forest Service surveys and watershed analyses, basin riparian assessment reports, Water Resource Inventory Area's habitat limiting factors analyses, and Water Resource Inventory Area's Ecosystem Diagnostic Treatment modeling to help identify priority areas. Develop and implement a public awareness campaign regarding the effectiveness and necessity of maintaining and improving riparian areas for supporting salmonids. Focus on how to restore and protect riparian areas. Emphasize restoration of riparian areas by planting native species appropriate to provide shade and functional large woody debris to form and maintain stream habitat. Highest priorities for restoration include impaired riparian areas along streams in identified local populations. Secondary priorities for restoration include riparian areas along tributaries to mainstem migratory, foraging, and overwintering habitats, and riparian areas along lake shorelines. Priority areas for protection include: developing rural areas within identified local populations and foraging and

migration, and overwintering areas with existing high quality habitat or habitat on a trajectory towards recovery.

1.3.2 Identify, evaluate, and restore overwintering habitat in the mainstem rivers and tributaries. In all core areas identify specific overwintering areas used by bull trout in the mainstem rivers and estuaries and classify general overwintering habitat for use, current condition, and restoration potential. Determine where overwintering habitat areas are degraded by factors such as sediment accumulation, bedload movement, or low flows in all core areas. Implement necessary restoration activities as described throughout this section to improve overwintering habitat.

1.3.3 Identify and restore foraging waters with high restoration benefit. Use Water Resource Inventory Area's habitat limiting factors analyses, and Water Resource Inventory Area's Ecosystem Diagnostic Treatment modeling, or conduct additional inventories where needed to select specific areas where restoration of known or potential foraging areas will contribute the most to bull trout recovery. Highest priorities are mainstems downstream of local populations used by anadromous life histories to reach marine habitats. These serve not only for adult migration, but also for subadult and adult foraging, overwintering and holding, and smolt migration. Secondary priorities are larger tributaries to mainstem reaches that now have or have potential for high salmon use.

1.3.4 Reduce stream channel degradation and increase channel complexity. Where feasible remove existing and prevent future bank armoring (bulkheads and riprap) and channel constrictions (e.g., dikes and levees) associated with development and agriculture. Restore connectivity to floodplain. Recreate lost off-channel habitat and opportunities for off-channel habitat formation through time by protecting channel migration areas from encroachment during new construction or reconstruction of these structures. Priority areas include most lower mainstem rivers in all core areas. Results from completed Water Resource Inventory Area Ecosystem Diagnostic Treatment modeling for Chinook salmon should help establish priorities.

1.3.5 Practice non-intrusive flood control and flood repair activities. Provide technical assistance to Counties, Cities, and private landowners to develop options for fish friendly flood control methods and repair techniques. Ensure that negative effects to bull trout habitat from ongoing flood control activities (e.g., dredging, woody debris removal, channel clearing, hardened bank stabilization, and riparian removal from dikes and levees) are avoided or minimized. Alternatives should emphasize restoration of floodplain connectivity and the elimination or setback of existing armored banks, dikes and levees to restore habitat forming processes.

1.3.6 Reduce development impacts on streams, floodplains, and lake shores. Avoid and minimize further development that will constrict or constrain stream channels, degrade riparian areas, negatively impact ground water and surface water

interactions, or in any other way degrade stream channel functions. Reduce impacts within floodplains and lake shores through development and implementation of appropriate zoning restrictions, restoration, and targeted acquisition (by Counties, land trusts, etc.) of prioritized lands.

1.3.7 Reduce transportation corridor impacts on streams. Reduce impacts from the legacy of road and railroad encroachment (e.g., sedimentation, channel straightening, channel relocation, channel constriction, and undersized bridges). Avoid future bank armoring (bulkheads and riprap) and channel constrictions (e.g., dikes, levees, undersized bridges) associated with transportation corridor construction and maintenance and, where necessary and feasible, remove existing bank armoring and channel constrictions to allow natural channel migration and formation of off-channel habitats. Avoid placing roads and bridges on alluvial fans, where channel migration naturally occurs over time. Results from completed Water Resource Inventory Area Ecosystem Diagnostic Treatment modeling for Chinook salmon and available Washington State Department of Transportation Corridor Analyses should help in establishing priorities. Priority areas for action are transportation corridors along most mainstem rivers in core areas, and some areas within local populations.

1.3.9 Restore natural stream channel morphology. Conduct stream channel restoration activities if they are likely to be beneficial to bull trout and other native fish and only where similar results cannot be achieved by other less costly and intrusive means. Priorities in foraging, migration, and overwintering areas include "straightened" mainstem river reaches and tributary streams entering mainstem rivers.

1.3.10 Enhance and restore instream habitat. Increase or enhance instream habitat by restoring habitat diversity. Projects should focus on the enhancement of habitat elements such as large woody debris, log jams, and complex channels in the short term, and the restoration of processes that support these habitat elements in the long term. High priorities are mainstem areas identified by the Water Resource Inventory Area's habitat limiting factors analyses, Water Resource Inventory Area's Ecosystem Diagnostic Treatment modeling, and other instream habitat assessments.

1.5 Identify upland conditions negatively affecting bull trout habitats and implement actions to restore appropriate functions.

1.5.3 Minimize levels of effective impervious surface from development. Minimize the effects of impervious surfaces by protecting hydrologically mature forest cover to the maximum extent feasible, and by implementing other low impact development measures. Alternatively, if lacking such forest condition, protect the opportunity to reestablish forest cover by minimizing amount of clearing, buildings, and infrastructure. If reestablishment of forest cover is not possible due to existing high intensity development (e.g., already built-out areas of cities and

unincorporated urban growth areas), then require highest levels of stormwater engineering and integrate low impact development measures (e.g., impervious surface removal, roof top gardens) where possible. For rural areas (i.e., lands not in cities or not within unincorporated areas with existing high density development) draining to bull trout foraging, migration and overwintering areas, maintain at least (but preferably more than) 65 percent hydrologically mature forest cover and no more (and preferably much less) than 10 percent effective impervious area. For cities and unincorporated areas with existing high density development, require the highest level of stormwater engineering available. For catchments draining to areas that are used for spawning and early rearing areas, developments should strive for zero percent effective impervious surfaces (i.e., all stormwater should be treated on site to match predevelopment peaks, duration and quality) and at least (but preferably much more than) 65 percent forest cover. Generally, protected forest cover should be contiguous with riparian areas, steep slopes, aquifer recharge areas and wetlands. Accomplish these protections through appropriate zoning and development standards.

Appendix G-3

Environmental and Cultural Resources

National Historic Preservation Act
Section 106 Compliance

Puyallup River Basin

Flood Risk Management Feasibility Study

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DEPARTMENT OF THE ARMY
SEATTLE DISTRICT, CORPS OF ENGINEERS
P.O. BOX 3755
SEATTLE, WASHINGTON 98124-3755

REPLY TO
ATTENTION OF

DEC 10 2015

Environmental and Cultural Resources Branch

Allyson Brooks, Ph.D.
Washington State Historic Preservation Officer
PO Box 48343
Olympia, WA 98504

Subject: Puyallup River Flood Risk Management General Investigation and Feasibility Study, Pierce and King Counties, Washington

Dear Dr. Brooks:

The Seattle District, U.S. Army Corps of Engineers (Corps) is currently conducting a feasibility study which formulates and evaluates potential solutions to address flood risk in the Puyallup River basin. The Puyallup River Basin Flood Risk Management Feasibility Study (Study) encompasses parts of Pierce and King Counties, Washington, and includes the Puyallup River, White River, and Carbon River drainages (Map 1). The Study is being carried out under the Corps' General Investigation (GI) Program. The Corps is the lead Federal agency. The non-Federal sponsor is Pierce County, Washington.

The purpose of this letter is to formally initiate consultation on the actions proposed in the Study and to describe the process by which the Corps will manage review under Section 106 of the National Historic Preservation Act (NHPA). This letter provides the background and purpose of the Study, describes the specific actions proposed in the agency Preliminary Tentatively Selected Plan (TSP), and defines the area of potential effect (APE) within the context of the Corps' general investigation/feasibility study planning process. The Corps has determined and documented the APE for actions proposed in the Preliminary TSP and is consulting with your office under Section 106 of the National Historic Preservation Act as provided at 36 C.F.R. § 800.4(a). The Corps is completing the initial steps of the Corps planning process, which will be documented in a Draft Integrated Feasibility Report and Environmental Impact Statement (FR/EIS). Actual footprints are still being formulated and may change as the study progresses through the feasibility-level design analysis that will be documented in a Final FR/EIS before completion of the feasibility study.

The Corps has concluded that a phased process is required to complete identification and evaluation of historic properties, including the partial deferment of identification and evaluation until the specific aspects or locations of the Preliminary TSP are more fully defined. As provided at 36 CFR 800.4(b)(2), the Corps has determined that a Programmatic Agreement (PA) is the appropriate means to manage a

phased review process for Section 106. The Corps would like to proceed with consultation on a PA, which would describe the phased process, including level of effort for inventory and evaluation, partial deferment of identification, evaluation, and assessment of effects to historic properties, and measures taken to avoid, minimize or mitigate effects to historic properties. The Corps is also notifying the Advisory Council on Historic Preservation (ACHP) as required at 36 C.F.R. 800.6(a)(1)(i)(c), as well as Indian tribes and other consulting parties, and inviting them to participate in the development of the PA.

The Puyallup River Basin General Investigation is a Flood Risk Management Study which includes an Integrated Feasibility Report and Environmental Impact Statement as its decision document. The Study is currently in the Comparison of Alternative Plans Phase of the Planning Process. The Corps has identified a Preliminary TSP and is in the process of identifying a Tentatively Selected Plan (TSP). Two alternatives were identified in the Study in addition to a No Action alternative. The Preliminary TSP is referred to as the Levee Modifications Alternative, which is the alternative described further in this letter for purposes of defining the APE for Section 106. The other alternative (Levee Modifications with Sediment Management Alternative) is not preferred due to its increased impacts to significant resources, mitigation needs, operation and maintenance costs, and the fact that it does not reduce flood risks as well as the Preliminary TSP over the planning timeframe. The No Action Alternative is not preferred because it does not reduce flood risks, but rather, flood risks would increase throughout the planning timeframe.

Study Background and Purpose

The Puyallup River Basin Flood Risk Management Feasibility Study is authorized under Section 209 of the *Flood Control Act (FCA) of 1962* (Public Law 87-874) and Study Resolution, Docket 2645, Committee on Transportation and Infrastructure, U.S. House of Representatives, dated 21, June 2000[1]. The study area is comprised of the floodplains of the major populated tributaries within the Puyallup River Basin, which includes the Puyallup River, White River and Carbon River (Map 1). The study area is primarily located in Pierce County, Washington with the exception of a portion of the study area north of the main stem of the White River located in King County. The Puyallup River drains the northwest slope of Mt. Rainier and flows northwesterly for approximately 50 miles before discharging into Commencement Bay in the city of Tacoma, Washington. The White River drains the northeastern slope of Mt. Rainier and flows in a general northwest direction for about 50 miles before turning southward and

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[1] The study resolution states "*... That the Secretary of the Army is requested to review the report of the Chief of Engineers on the Upper Puyallup River, Washington, dated 1936, as referenced in the Flood Control Act of 1936 (P.L. 74-738), the Puget Sound and Adjacent Waters Study, authorized by Section 209 of the Rivers and Harbors Act of 1962 (P.L. 87-874) and other pertinent reports to determine whether modifications to the recommendations contained therein are advisable, with references toward providing improvements in the interest of water resource and watershed issues affecting Lake Tapps and the White River Watershed downstream of Mud Mountain Dam, Washington.*" The referenced 1936 report included the entire Puyallup watershed, including the Puyallup River and tributaries such as the White River and Carbon River.

entering the Puyallup River from the north at River Mile (RM) 10.3. The White River is the largest tributary to the Puyallup River. Mud Mountain Dam (MMD), a federally authorized flood control project, is located at RM 29.6 on the White River. The Carbon River originates on the north face of Mt. Rainier at the Carbon Glacier and enters the Puyallup River at RM 17.3.

The Puyallup River Basin includes the cities of Tacoma, Fife, Puyallup, Sumner, Auburn, and Orting, and drains a watershed of approximately 1,040 square miles. Existing development in the floodplain within the Puyallup River study area includes residential development, industrial and commercial development, critical infrastructure such as schools and water treatment plants, and major transportation infrastructure, including Interstate 5, railroad lines and the Port of Tacoma.

The study area includes 29 levee segments currently in the U.S. Army Corps of Engineers National Levee Database (NLD). This includes twenty-seven non-federal levees and two federally owned and operated levees. The river hydrology is also modified by MMD, a Corps authorized and constructed project located on the White River at RM 29.6. MMD was authorized as Mud Mountain Reservoir by the *Flood Control Act of 22 June 1936, 74th Congress, 2nd Session*. The Flood Control Act of 1938 provided for operation and maintenance (O&M) of the project by the Corps and the *Flood Control Act of 1944* authorized construction and O&M of recreational facilities. In addition, the *Flood Control Act of June 28, 1938* provided for the construction and maintenance of a channel conveyance project on the Lower Puyallup River. Completed in 1950, the federally constructed and maintained levees were built from RM 0.7 to RM 2.8 on the Lower Puyallup River and were authorized as a companion project to MMD. The levees are 2.1 miles in length on the left and right banks and allow for an in-channel conveyance capacity of 50,000 cubic feet per second (cfs).

Major flood events since the construction of MMD have occurred in the Puyallup Basin in 1990, 1996, 2006, and 2009. Although other floods have produced higher peak flows at different points throughout the basin, the flood of February 1996 was the worst basin-wide (as well as regional) flood event seen in recent times. The peak flow at Puyallup, WA was approximately 47,000 cfs. Total costs in damages to Pierce County and surrounding local jurisdictions for this event were estimated to be over $40 million. Over 1,300 people in Pierce County requested Federal assistance in response to this flood event (Pierce County, 2013). The flood of record (based on peak flow) in the lower Puyallup occurred in December of 1933, prior to the construction of MMD. This event produced a peak flow (as recorded by U.S. Geological Survey gage 12101500) of 57,000 cfs at Puyallup WA. This value could have been even higher as this event exceeded the channel capacity resulting in water in the floodplain that could not be measured by the stream gage. The 1933 flood event was a catalyst for the planning, authorization and construction of MMD.

The Puyallup Basin contains a patchwork of locally constructed and maintained levee systems on each of the tributaries. Most of the local levees were constructed during a period between the 1910's and the 1930's and many have been repaired, realigned, or otherwise modified in the ensuing decades. Due to the age and condition of the infrastructure, reliability of flood risk management works is of critical concern to the sponsor. Major flood events in 1996, 2006, and 2009 resulted in overtopping, scour, and breaching of levees throughout the basin prompting significant repair costs and maintenance activities at a local level.

Agency Preliminary TSP - Proposed Flood Risk Management Actions

The intent of the actions proposed in the Preliminary TSP is to modify the existing levee system to manage flood risk by setting back levees, increasing existing levee heights, improving existing levee reliability, or constructing new levees. The proposed levee modifications are the primary flood protection features and would work with other flood risk management features to increase channel capacity and reduce flood risk within the study area. Actual levee alignments, footprints, or alternative measures will be better refined and sited during the feasibility study and subsequent pre-construction and engineering design process.

The specific actions are described below for each reach of the Puyallup River. Due to the configuration of the Puyallup River, the river is described for purposes of the study as the Lower Puyallup River (RM 0.0 – RM 10.3), Middle Puyallup River (RM 10.3 – RM 17.4) and Upper Puyallup River RM (17.4 – RM 29.6). A general overview of each action and associated APE is provided in Maps 2 through 6.

Lower Puyallup River (RM 0.0 – RM 10.3)

Federal Authorized Levees (Left and Right Bank): The Federal Authorized Levees (FAL) extend from RM 0.7 to RM 2.7 on the right bank and RM 0.7 to RM 2.9 on the left bank. The Preliminary TSP proposes to raise sections of the left and right banks of the FAL along the Lower Puyallup River (Map 7). The authorized capacity of the Federal Levees is 50,000 cfs, which was intended to provide protection to the 1% annual chance of exceedence (ACE) flood event[2]. The proposed modifications to the Federal Levees are aimed at continuing to provide protection from the 1% ACE flood with the proposed modifications to the non-Federal levees upstream. The FAL right bank levee would be raised from RM 2.0 to 2.7, and the FAL left bank levee would be raised from RM 1.5 to 2.9.

[2] In Corps reports dealing with flood risk management, the risk of an individual storm or flood event occurring is expressed as the annual chance of exceedance (ACE), which is the probability that the specified discharge, or flood event, could be equaled or exceeded during any given year. A "1% ACE flood" has in the past commonly been referred to as a "100-yr flood". The occurrence of a specific ACE flood in one year, does not alter its ACE in the next year. Many documents, along with maps and other supporting materials, use "x-year flood" expressions, in which the number of years is sometimes known as "the return interval." (See Figure 1).

North Levee Road A- Setback: The Preliminary TSP proposes setting back the North Levee Road levee on the right bank of the Lower Puyallup River extending from RM 2.7 to the end of the North Levee Road at RM 8.1 (Maps 7, 8 and 9). In the Preliminary TSP, the levee would be setback from RM 2.7 to RM 4.2 (Frank Albert Road) approximately 1,000 feet, from RM 4.2 to RM 6.0 approximately 80 to 100 feet, from RM 6.0 to RM 7.1 approximately 600 feet, and from RM 7.1 to RM 8.1 approximately 80 to 100 feet. The setback levee alignment is approximately 32,000 linear feet with approximate levee heights ranging from 6 to15 feet. This feature proposes to setback and raise the levee to safely convey the 1% ACE elevation plus three feet of freeboard. The proposed levee modification would manage flood risks to residential, commercial and industrial properties. The existing levee would be removed and the material re-used in the setback levee.

River Road Levee Floodwall: The Preliminary TSP considers adding a flood wall along the River Road Levee on the left bank of the Lower Puyallup River extending from RM 2.9 to RM 7.2 (Map 9). This floodwall would reduce risks to the transportation corridor and residential, commercial and industrial structures. The floodwall height would range from 4 to 8 feet, with the average of about 6 feet.

Lower Puyallup River Extension Levee (OR Floodwall): The Preliminary TSP considers extending the levee on the left bank of the Lower Puyallup River from RM 7.2 to RM 8.6 (Map 9). The new extension levee would be 7,200 feet and would incorporate about 1,100 feet of the existing River Road Levee. The levee height would vary between 8 and 13 feet. In areas where the levee is currently 8 feet tall, there would be about 3.5 of additional fill placed on the existing berm.

White River (Puyallup River RM 10.3 / White River RM 0.0 to RM 29.6)

New Levees - Pacific Park Levee / Butte Avenue Levee / Lower White River Levee: The Preliminary TSP proposes new levees along the right bank of the White River to manage flood risks to residential, commercial, and industrial properties. The new levees would extend from RM 1.7 to RM 4.5 and RM 4.9 to 6.2 at Pacific Park (Maps 12 and 13).

Property Acquisition: The Preliminary TSP proposes to acquire 35 acres of property that would be impacted between RM 4.6 to RM 5.0 along the left bank of the White River. These properties have experienced repetitive flood impacts and are at risk to additional adverse flood impacts.

Middle Puyallup River (RM 10.3 – RM 17.4)

HWY 410 Floodwall and Levee: The Preliminary TSP proposes adding a combination of a new levee and floodwall that would provide protection to the adjacent SR 410 and residential properties. The levee section is proposed between RM 10.7 and 11.0 and the floodwall would be located between RM 11.0 to 11.8 (Map 10). The

height of the levee and floodwall would vary between 6 and 12 feet to provide 3 feet of freeboard from the 1% ACE flood elevation.

Upper Puyallup River (RM 17.4 – RM 28.6)

Jones Levee Improvement: The Jones Levee extends from RM 21.3 to RM 22.5, along the right bank of the Upper Puyallup River (Map 11). The Preliminary TSP proposes to modify the levee in place by increasing the levee heights approximately 1.5 feet to 6.5 feet as well as improving the riverside erosion protection. This levee modification would also include a flow deflector design extending into the Ford Levee.

Area of Potential Effect (APE)

For the general investigation/feasibility study planning effort, the Corps is still involved in the feasibility level of design. Actual footprints are still being formulated and may change. Though a design change may alter the APE as described, the general parameters and buffers for any subsequent APE would remain for the proposed action.

For purposes of the Study, the Corps proposes to establish a buffered APE to consider direct effects that would extend out 100 feet around the proposed construction footprint of new levees, raised levees, setback levees, and any other required construction action, including levee removal, road relocations, staging areas and fill areas as they are identified. Rather than define a specific boundary for the APE for indirect effects, the Corps proposes that for purposes of the Study, a general indirect effects APE extend to the damage reach boundaries for flood inundation for a 1% ACE flood event (Maps 14 through 21). Within that area, the Corps would correlate existing cultural resources information and information gathered through consultation and compare the baseline without any action against the estimated future conditions under the Preliminary TSP to determine whether there are known or recorded resources in areas that might be threatened or affected. Specifically for visual, auditory or atmospheric intrusions, the Corps would propose to extend the study APE to a ¼ mile buffer around new levees, setback levees, floodwalls, or levees that would be raised.

In considering the APE for indirect effects, the Corps believes that the primary concern for indirect adverse effects would relate to the following:

- visual intrusions on the historic setting of a historic property which results from raising the height of an existing levee or constructing a new levee or floodwall
- flood inundation in new areas as a result of changes to the levee system
- increase in the depth of existing flood inundation as a result of changes to the levee system
- increased development or change of use in lands provided protection from future flooding
- acquisition and removal of properties in areas at high risk for induced flooding

Conversely, the Corps believes that there would be positive indirect effects to historic properties from the measures proposed in the plan, including:

- reduced threats to historic properties from flood damage as flood protection levels are increased
- less threat of inundation of historic properties throughout the basin as a whole

The APE as described considers both direct and indirect effects. The APE is based on current engineering design and construction plans and would be adjusted accordingly should the design or construction plans change. Roads may need to be shifted or relocated due to construction of new levees or expanded levee profiles where levees are raised or improved. At this time, no specific roads have been identified that would be shifted or relocated. Staging and access areas have not been established and would be included in the APE as that information becomes available. The Preliminary TSP has not identified a source for fill material. At this time, it is assumed that material from levees proposed for removal would be re-used in construction of the new levees or setback levees or that a commercial source of clean fill would be used. As engineering and design specifications are refined, the APE for direct and indirect effects would be revised as necessary to include all areas required for construction, access, staging, or fill material. It is important to emphasize that the baseline for considering effects may change regardless of the Federal action. Aside from the actions proposed in the Preliminary TSP, Pierce County and King County have identified projects that may be constructed before the Study will be completed and construction is initiated.

Within the Corps' planning process, feasibility studies emphasize making risk – informed decisions using existing information for planning decisions on overall project feasibility. Detailed studies may be phased as appropriate to pre-construction engineering and design after feasibility is completed. Archaeological surveys or other intensive field investigations normally would not be conducted without access/right-of-way agreements, which would not be pursued unless the project is authorized and funded. Given the parameters of the general investigation/feasibility study planning process, the Corps believes that the APE is sufficient to identify and consider both direct and indirect effects of the undertaking.

In addition to your office, the Corps is in the process of identifying and notifying consulting parties who might be interested in consulting on the Study and participating in the PA, including the ACHP, the Puyallup Tribe of the Puyallup Reservation, Muckleshoot Indian Tribe of the Muckleshoot Reservation, Nisqually Indian Tribe of the Nisqually Reservation, Squaxin Island Tribe of the Squaxin Island Reservation, Snoqualmie Tribe, Confederated Tribes and Bands of the Yakama Nation, Historic Preservation Commissions of certified local governments, and other government agencies and members of the public with a demonstrated interested in cultural, historical or social components of the Puyallup River Flood Risk Management General Investigation and Feasibility Study. We anticipate the PA would provide a process to continue identification and evaluation of historic properties as the Preliminary TSP is refined and proposed actions are approved and funded, determining effects on historic

properties, and addressing post-review discoveries of archaeological sites and inadvertent discoveries of human remains. We may also consider identifying best management practices or standard treatments of certain properties or effects, and the manner in which the Corps will conclude its Section 106 responsibilities for these individual actions.

As noted at the outset of this letter, our primary purpose is to begin consultation on the Puyallup River Flood Risk Management General Investigation and Feasibility Study. We have defined and documented the APE and request to phase and defer identification and evaluation of historic properties as provided at 36 C.F.R. § 800.4(b)(2) through the development of a PA as provided at 36 C.F.R. § 800.14(b). As we move forward in consultation with the other consulting parties and your office to develop the PA for this undertaking, we would appreciate any advice and guidance you might provide.

The Corps requests your review and agreement with our determination of the APE and look forward to consulting with your office on this Study. For more information about the Puyallup general investigation/feasibility study, clarification about this request or any other concerns, please contact Mr. Rolla Queen (Senior Program Archaeologist) by telephone at (206) 316-3094 or by email at Rolla.L.Queen@usace.army.mil. I can be reached by telephone at (206) 764-6922 or by email at Evan.R.Lewis@usace.army.mil

Sincerely,

Evan R. Lewis, Chief
Environmental and Cultural Resources Branch

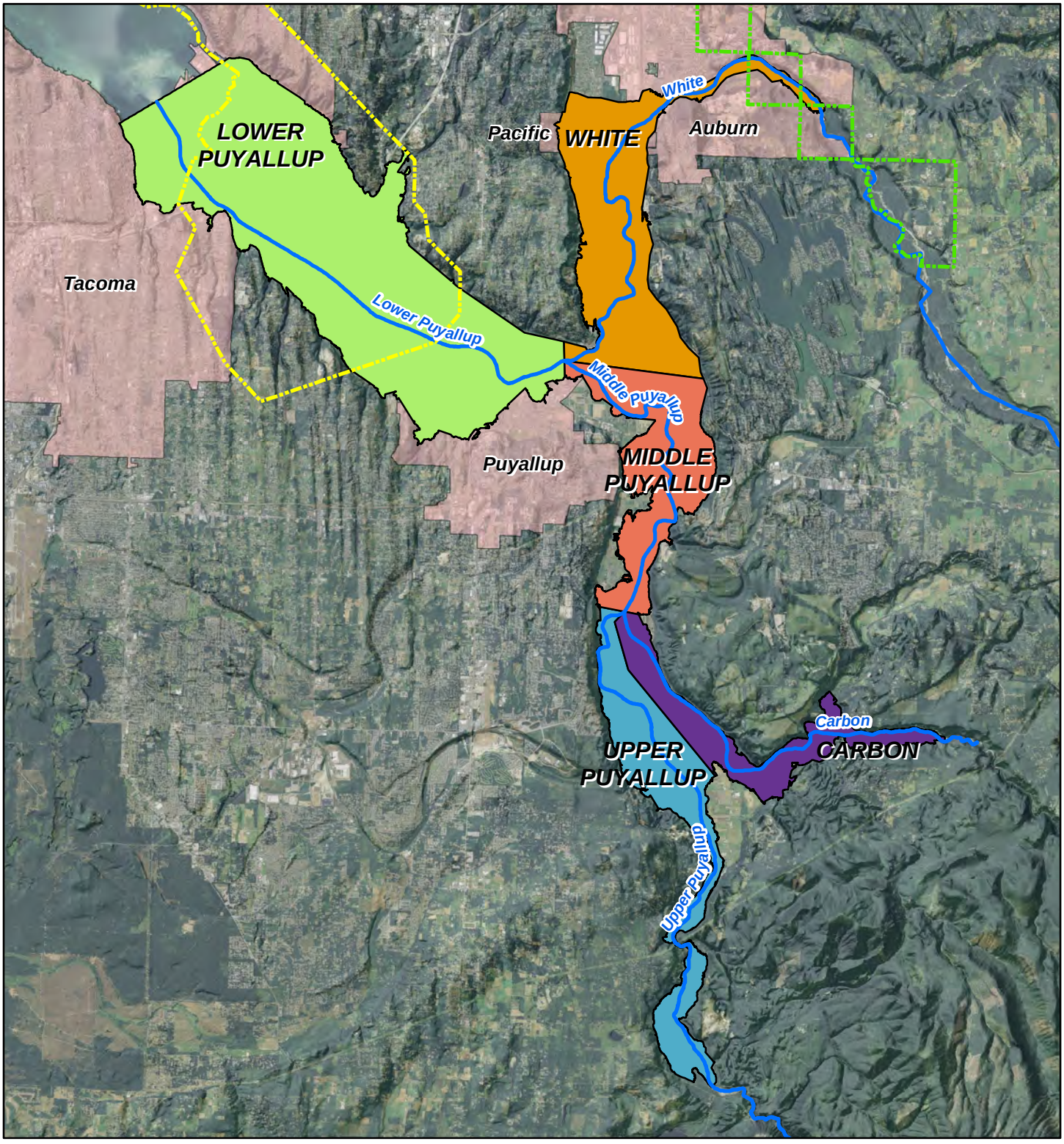
Enclosures

Figure 1: Annual Chance of Exceedance (ACE) Conversion from Return-Interval in Years

Annual Chance of Exceedance (ACE) in %	Average Return Interval in Years
50	2
10	10
5	20
4	25
2	50
1	100
0.4	250
0.2	500

MAP 1

Puyallup River Basin General Investigation - River Reaches



River Reaches

- CARBON
- LOWER PUYALLUP
- MIDDLE PUYALLUP
- UPPER PUYALLUP
- WHITE

- Rivers
- Muckleshoot Tribe
- Puyallup Tribe
- Cities

0 0.5 1 2 Miles

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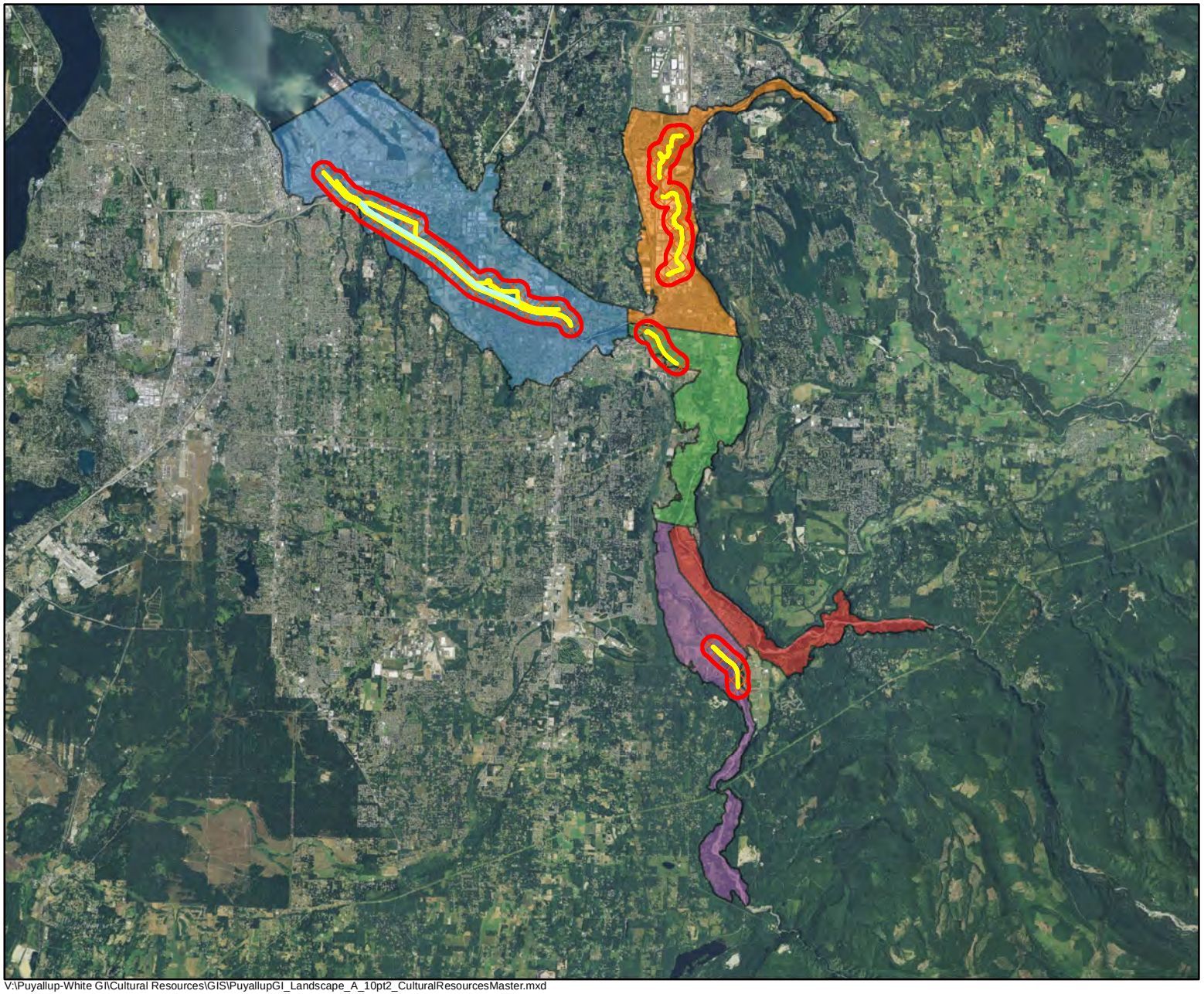
MAP 2

Puyallup General Investigation and Feasibility Study



Legend

Area of Potential Effect 1320' Buffer

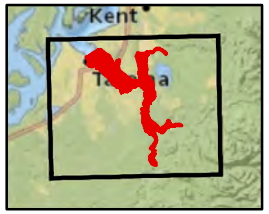
- Levee Removal
- Levee Raise / Setback / Floodwalls
- APE - 1320' Buffered Footprint

Puyallup GI STUDY AREA

NAME

- CARBON
- LOWER PUYALLUP
- MIDDLE PUYALLUP
- UPPER PUYALLUP
- WHITE

Location Map



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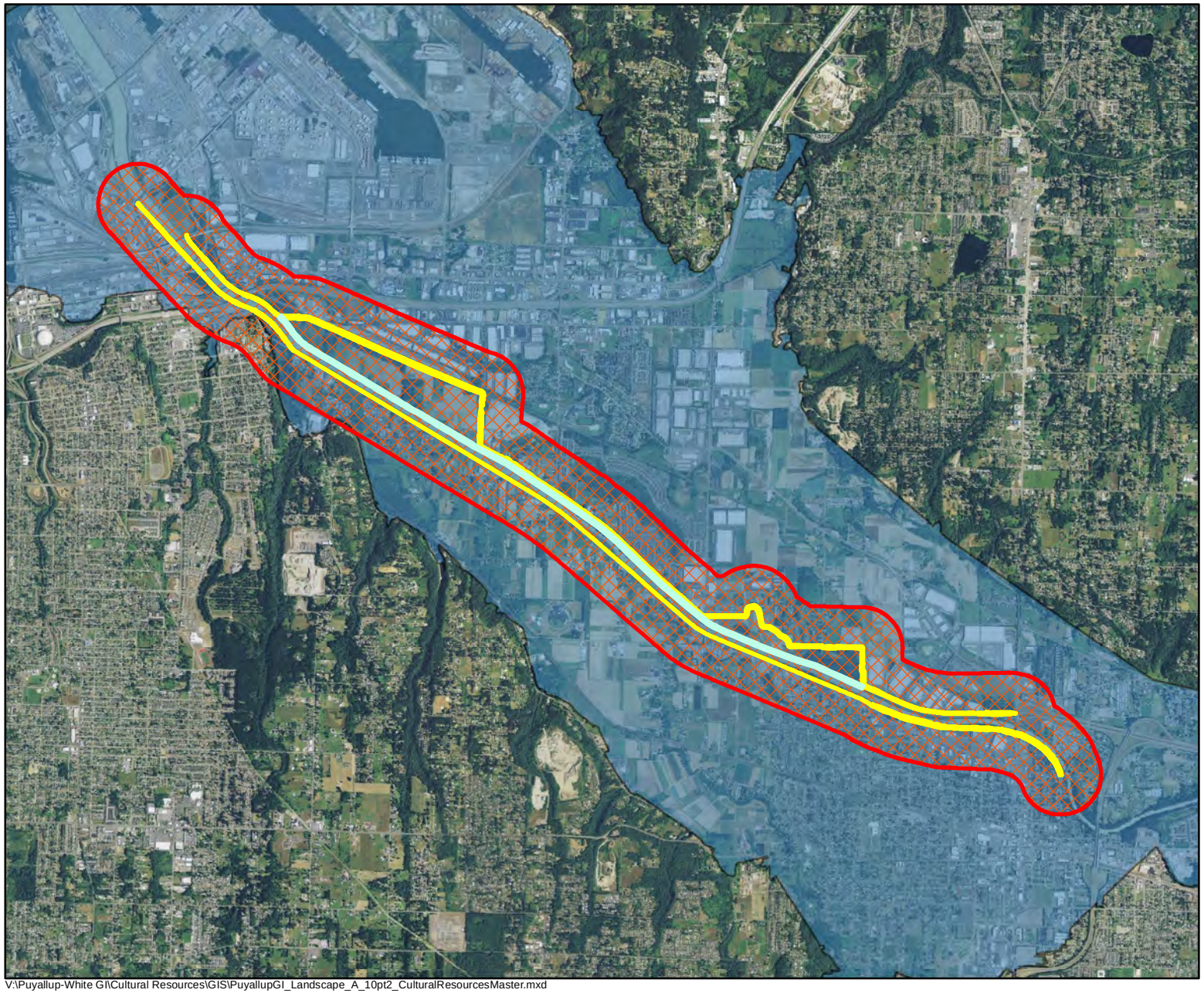
MAP 3

Puyallup General Investigation and Feasibility Study



Legend

Area of Potential Effect 1320' Buffer

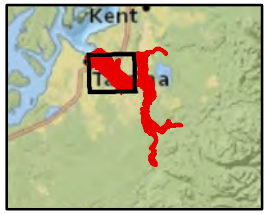
- Levee Removal
- Levee Raise / Setback / Floodwalls
- APE - 1320' Buffered Footprint

Puyallup GI STUDY AREA

NAME

- CARBON
- LOWER PUYALLUP
- MIDDLE PUYALLUP
- UPPER PUYALLUP
- WHITE

Location Map



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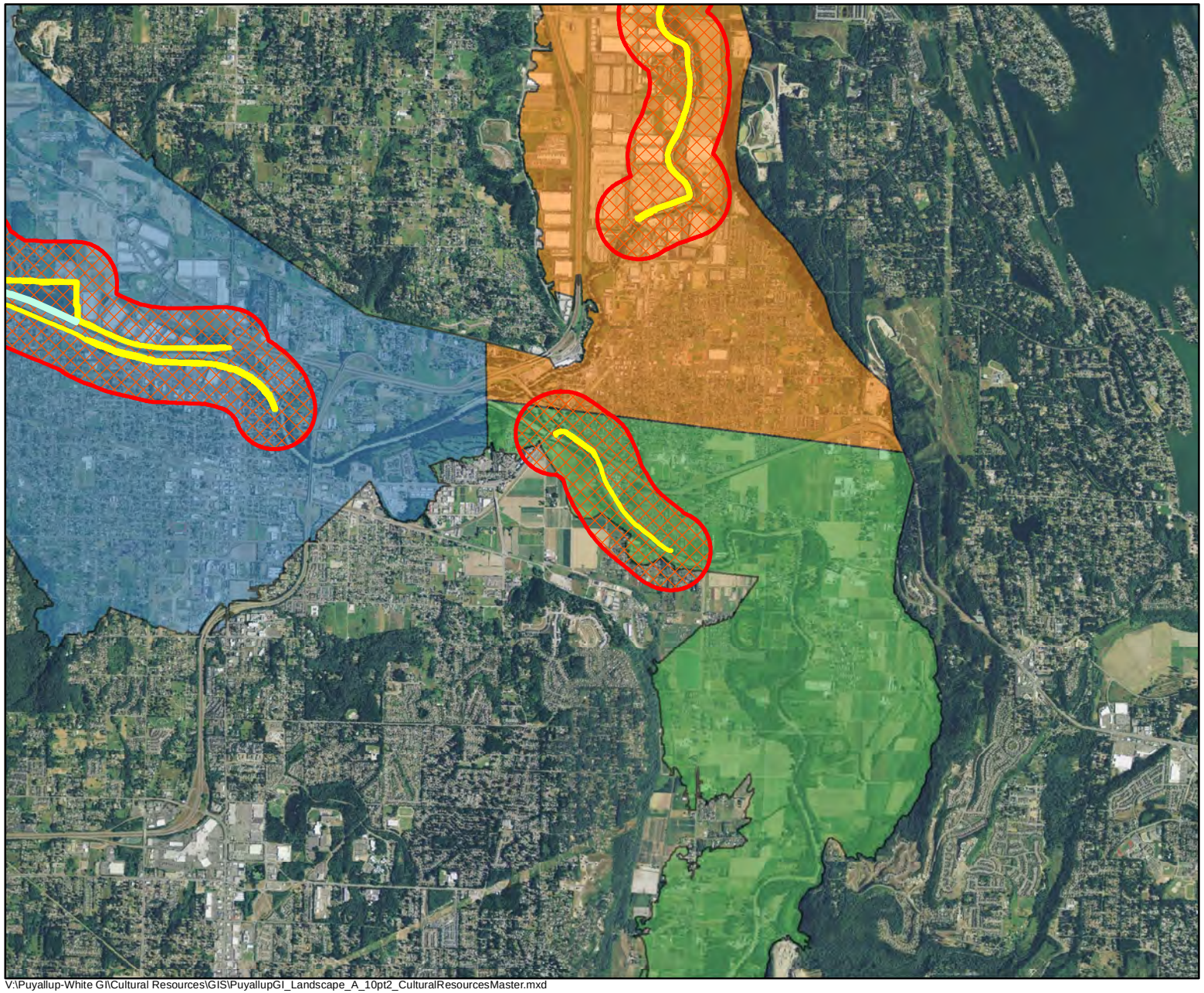
MAP 4

Puyallup General Investigation and Feasibility Study



Legend

Area of Potential Effect 1320' Buffer

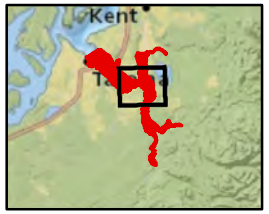
- Levee Removal
- Levee Raise / Setback / Floodwalls
- APE - 1320' Buffered Footprint

Puyallup GI STUDY AREA

NAME

- CARBON
- LOWER PUYALLUP
- MIDDLE PUYALLUP
- UPPER PUYALLUP
- WHITE

Location Map



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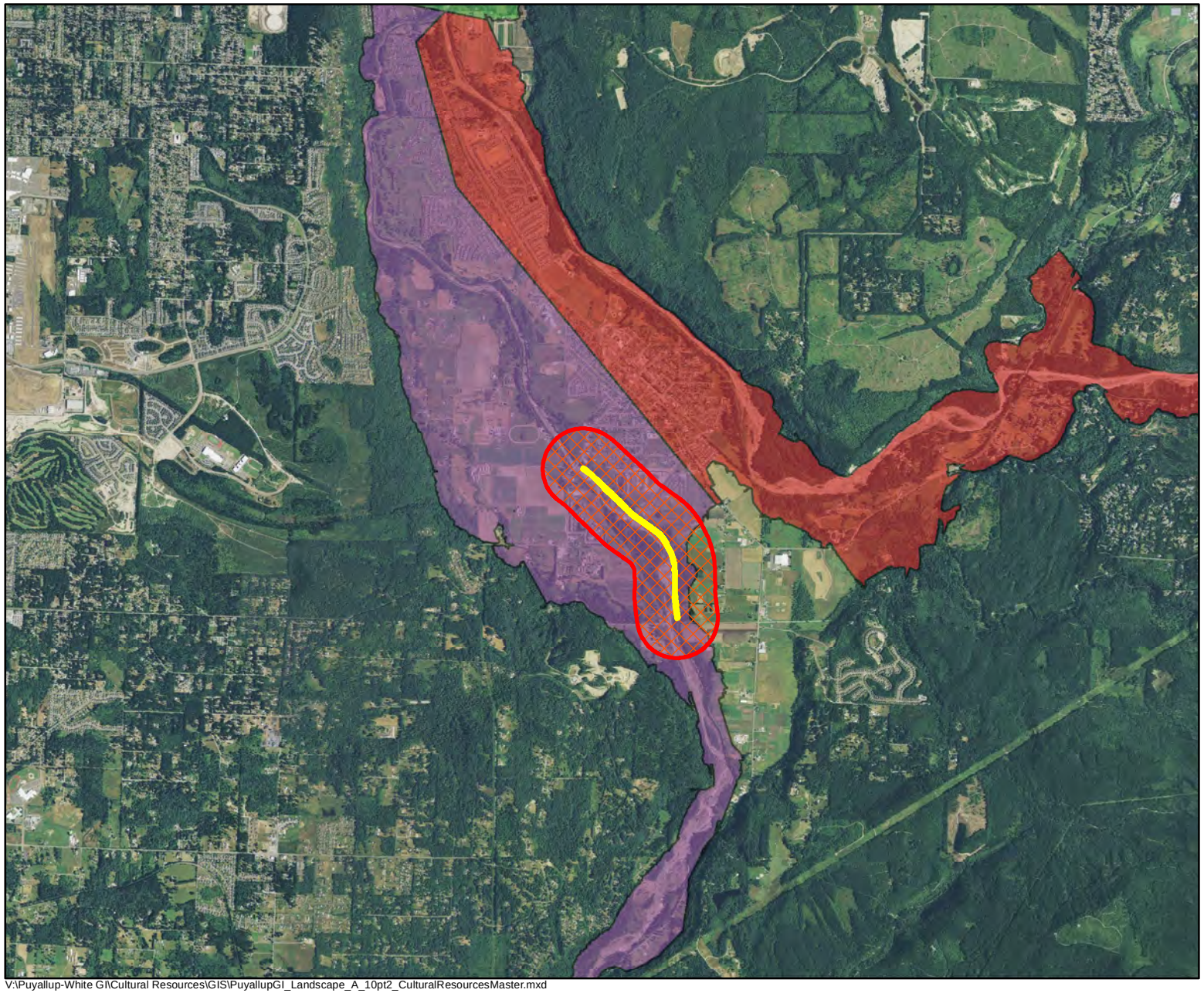
MAP 5

Puyallup General Investigation and Feasibility Study



Legend

Area of Potential Effect 1320' Buffer

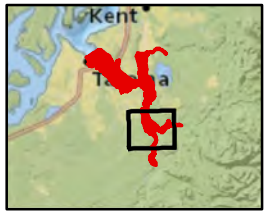
- Levee Removal
- Levee Raise / Setback / Floodwalls
- APE - 1320' Buffered Footprint

Puyallup GI STUDY AREA

NAME

- CARBON
- LOWER PUYALLUP
- MIDDLE PUYALLUP
- UPPER PUYALLUP
- WHITE

Location Map



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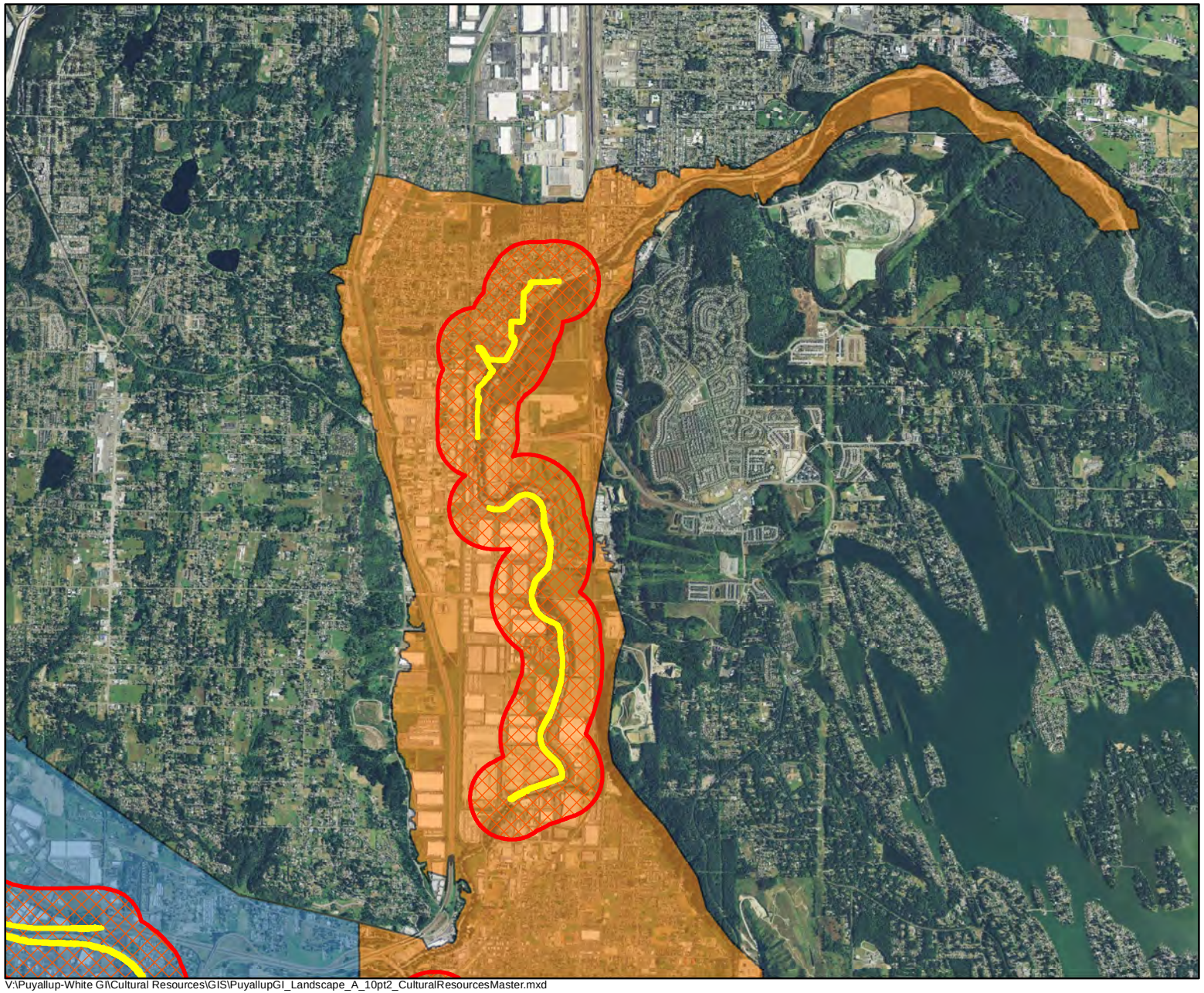
MAP 6

Puyallup General Investigation and Feasibility Study



Legend

Area of Potential Effect 1320' Buffer

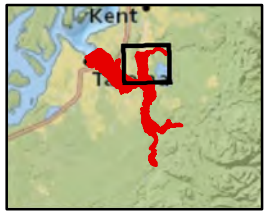
- Levee Removal
- Levee Raise / Setback / Floodwalls
- APE - 1320' Buffered Footprint

Puyallup GI STUDY AREA

NAME

- CARBON
- LOWER PUYALLUP
- MIDDLE PUYALLUP
- UPPER PUYALLUP
- WHITE

Location Map



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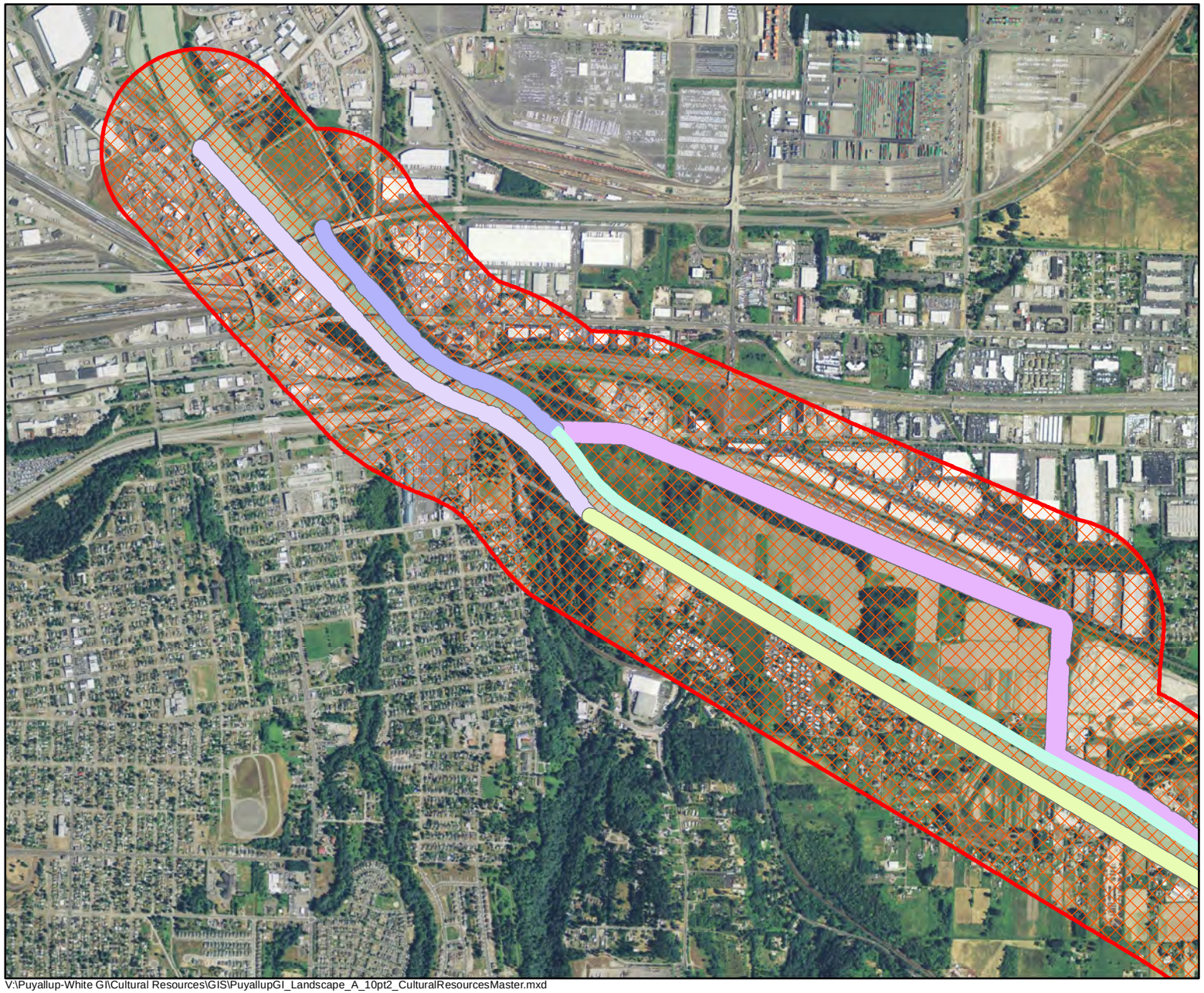
MAP 7

Puyallup General Investigation and Feasibility Study



Legend

Area of Potential Effect 100'/ 1320' Buffered Segments

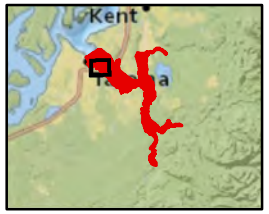
Levee Removal

APE - 100' Buffered Footprint

NAME

- Butte Ave Levee
- HWY 410 Floodwall
- HWY 410 Levee
- Jones Levee Raise in Place
- Lowev White River Levee
- North Levee Road Setback
- Pacific Park Levee
- Puyallup Left Bank Federal Levee
- Puyallup Right Bank Federal Levee
- River Road Levee Floodwall
- Riverwalk Levee
- APE - 1320' Buffered Footprint

Location Map



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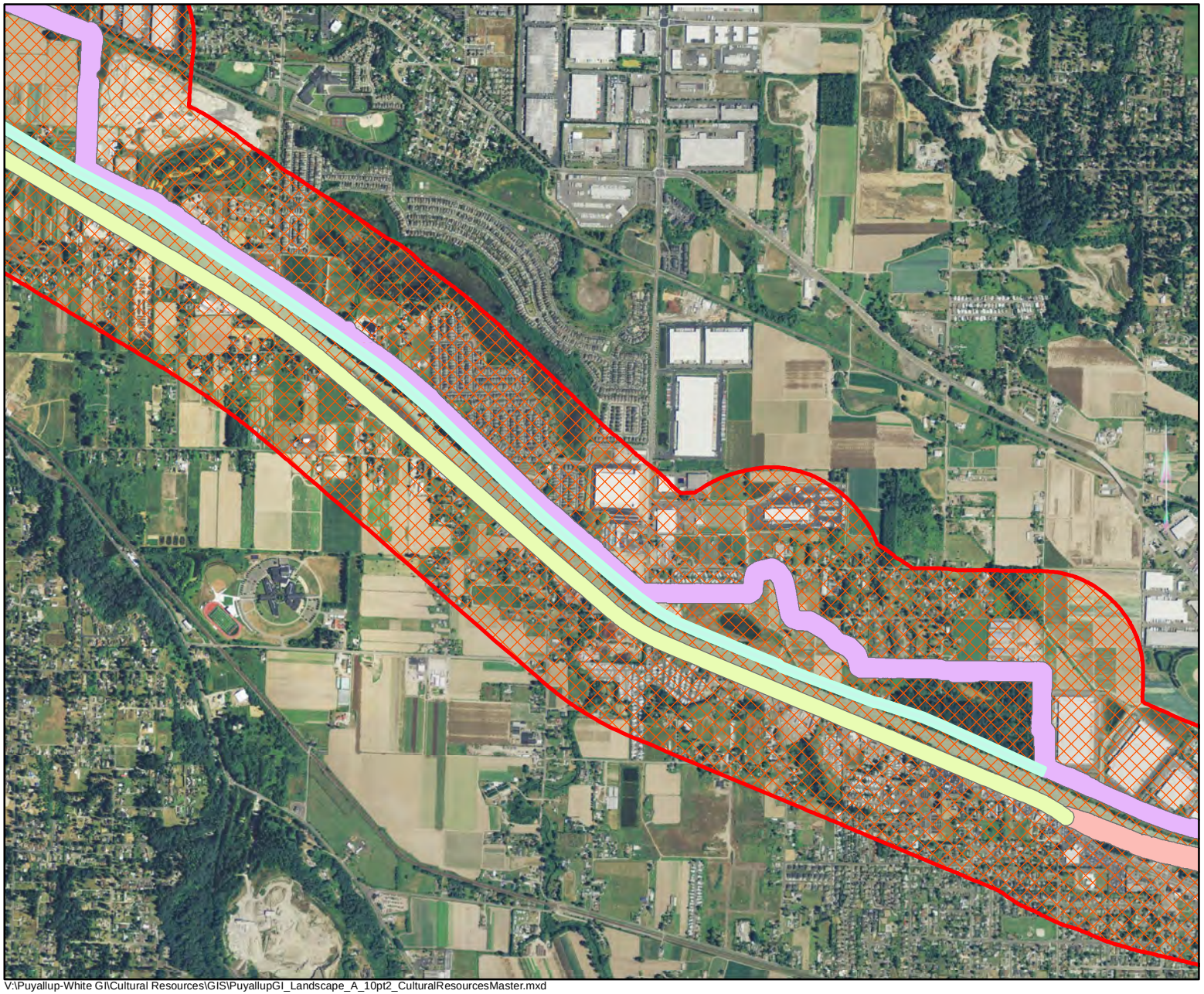
MAP 8

Puyallup General Investigation and Feasibility Study



Legend

Area of Potential Effect 100'/ 1320' Buffered Segments

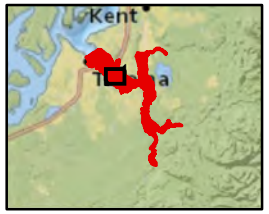
- Levee Removal

APE - 100' Buffered Footprint

NAME

- Butte Ave Levee
- HWY 410 Floodwall
- HWY 410 Levee
- Jones Levee Raise in Place
- Lowev White River Levee
- North Levee Road Setback
- Pacific Park Levee
- Puyallup Left Bank Federal Levee
- Puyallup Right Bank Federal Levee
- River Road Levee Floodwall
- Riverwalk Levee
- APE - 1320' Buffered Footprint

Location Map



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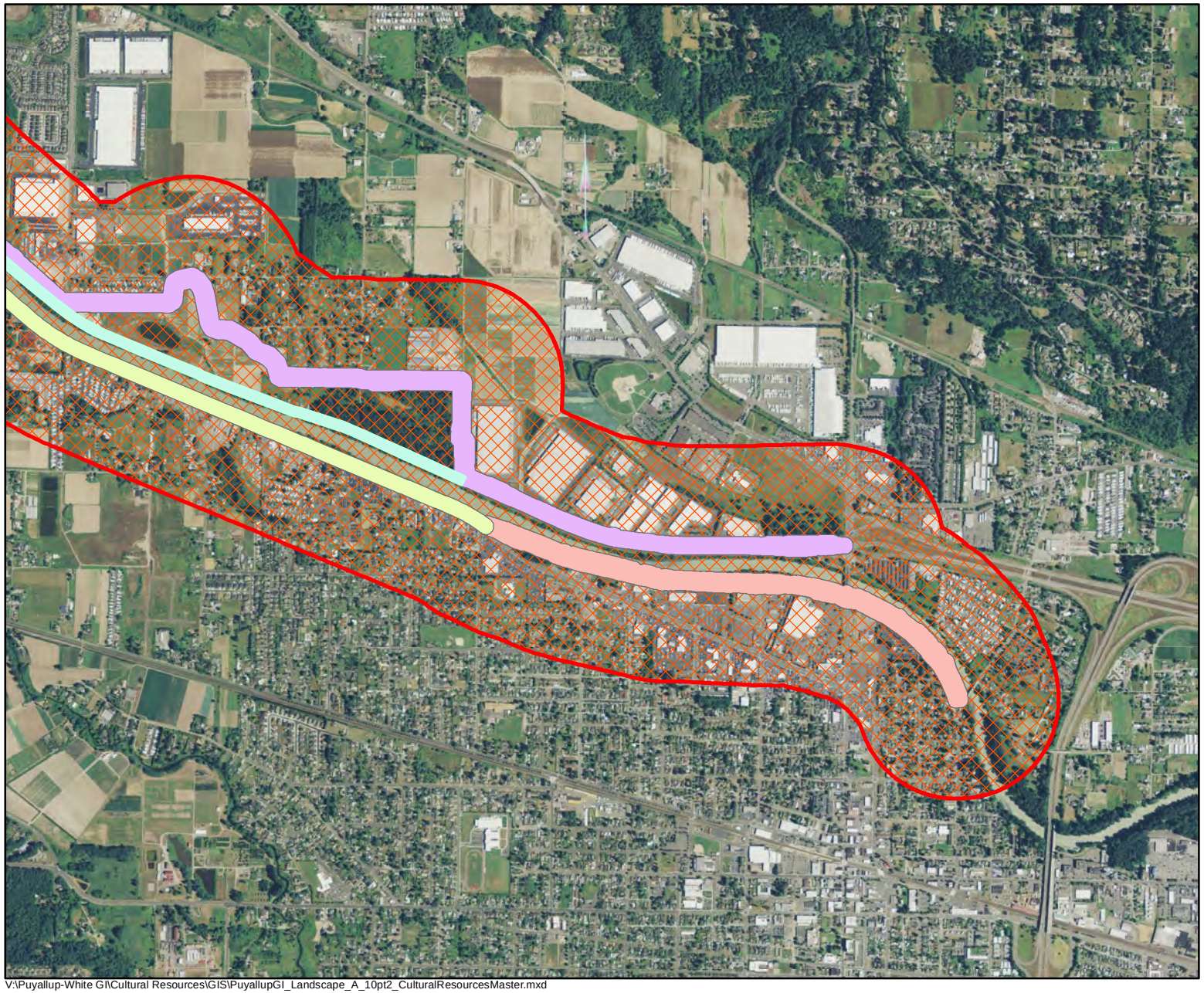
MAP 9

Puyallup General Investigation and Feasibility Study



Legend

Area of Potential Effect 100'/ 1320' Buffered Segments

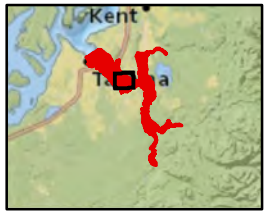
- Levee Removal

APE - 100' Buffered Footprint

NAME

- Butte Ave Levee
- HWY 410 Floodwall
- HWY 410 Levee
- Jones Levee Raise in Place
- Lowev White River Levee
- North Levee Road Setback
- Pacific Park Levee
- Puyallup Left Bank Federal Levee
- Puyallup Right Bank Federal Levee
- River Road Levee Floodwall
- Riverwalk Levee
- APE - 1320' Buffered Footprint

Location Map



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MAP 10

Puyallup General Investigation and Feasibility Study

Legend

Area of Potential Effect 100'/ 1320' Buffered Segments

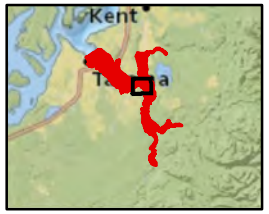
Levee Removal

APE - 100' Buffered Footprint

NAME

- Butte Ave Levee
- HWY 410 Floodwall
- HWY 410 Levee
- Jones Levee Raise in Place
- Lowev White River Levee
- North Levee Road Setback
- Pacific Park Levee
- Puyallup Left Bank Federal Levee
- Puyallup Right Bank Federal Levee
- River Road Levee Floodwall
- Riverwalk Levee
- APE - 1320' Buffered Footprint

Location Map



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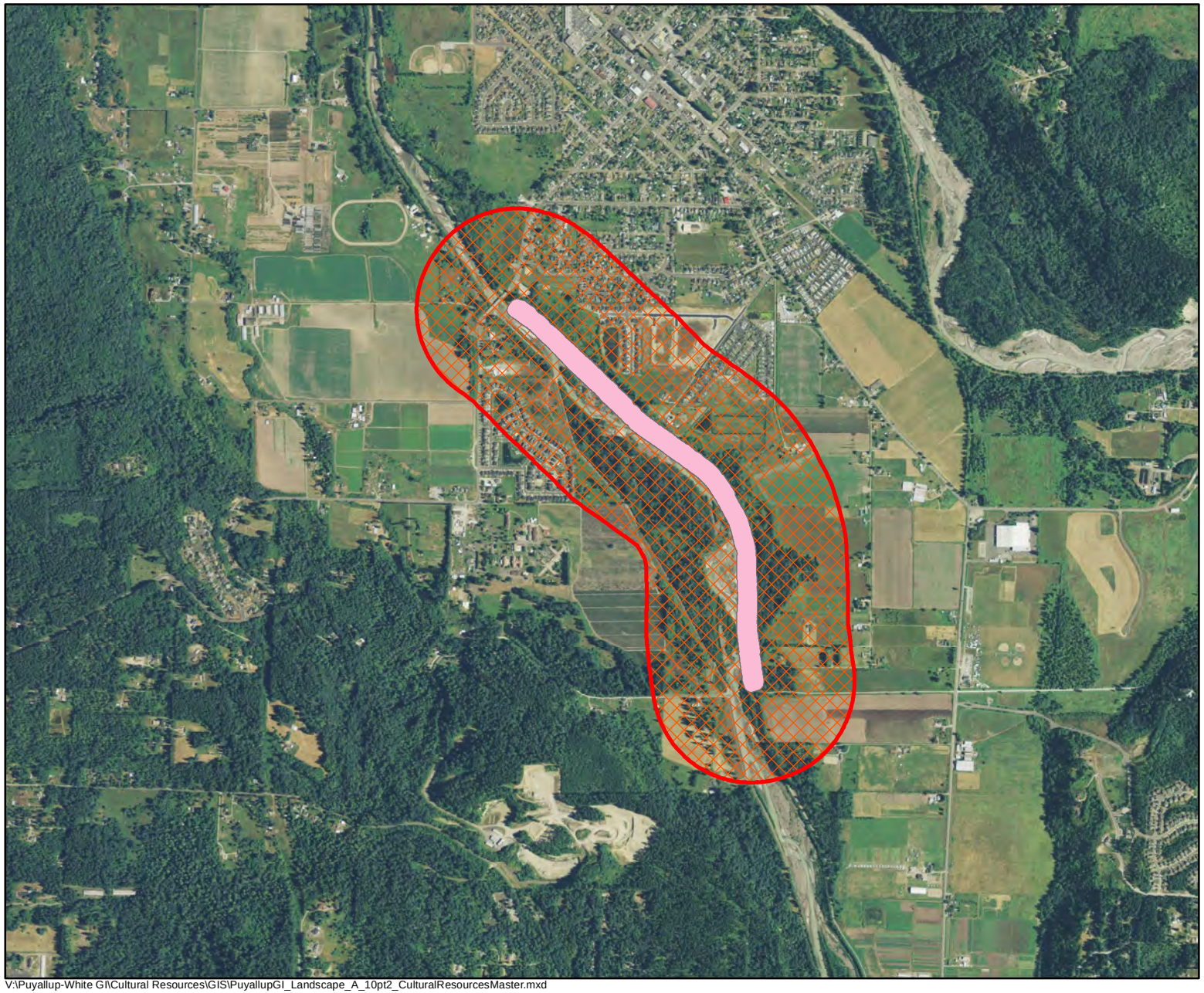
MAP 11

Puyallup General Investigation and Feasibility Study



Legend

Area of Potential Effect 100'/ 1320' Buffered Segments

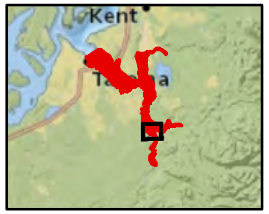
Levee Removal

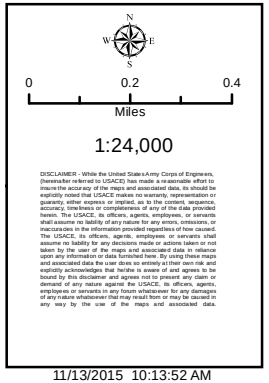
APE - 100' Buffered Footprint

NAME

- Butte Ave Levee
- HWY 410 Floodwall
- HWY 410 Levee
- Jones Levee Raise in Place
- Lowev White River Levee
- North Levee Road Setback
- Pacific Park Levee
- Puyallup Left Bank Federal Levee
- Puyallup Right Bank Federal Levee
- River Road Levee Floodwall
- Riverwalk Levee
- APE - 1320' Buffered Footprint

Location Map





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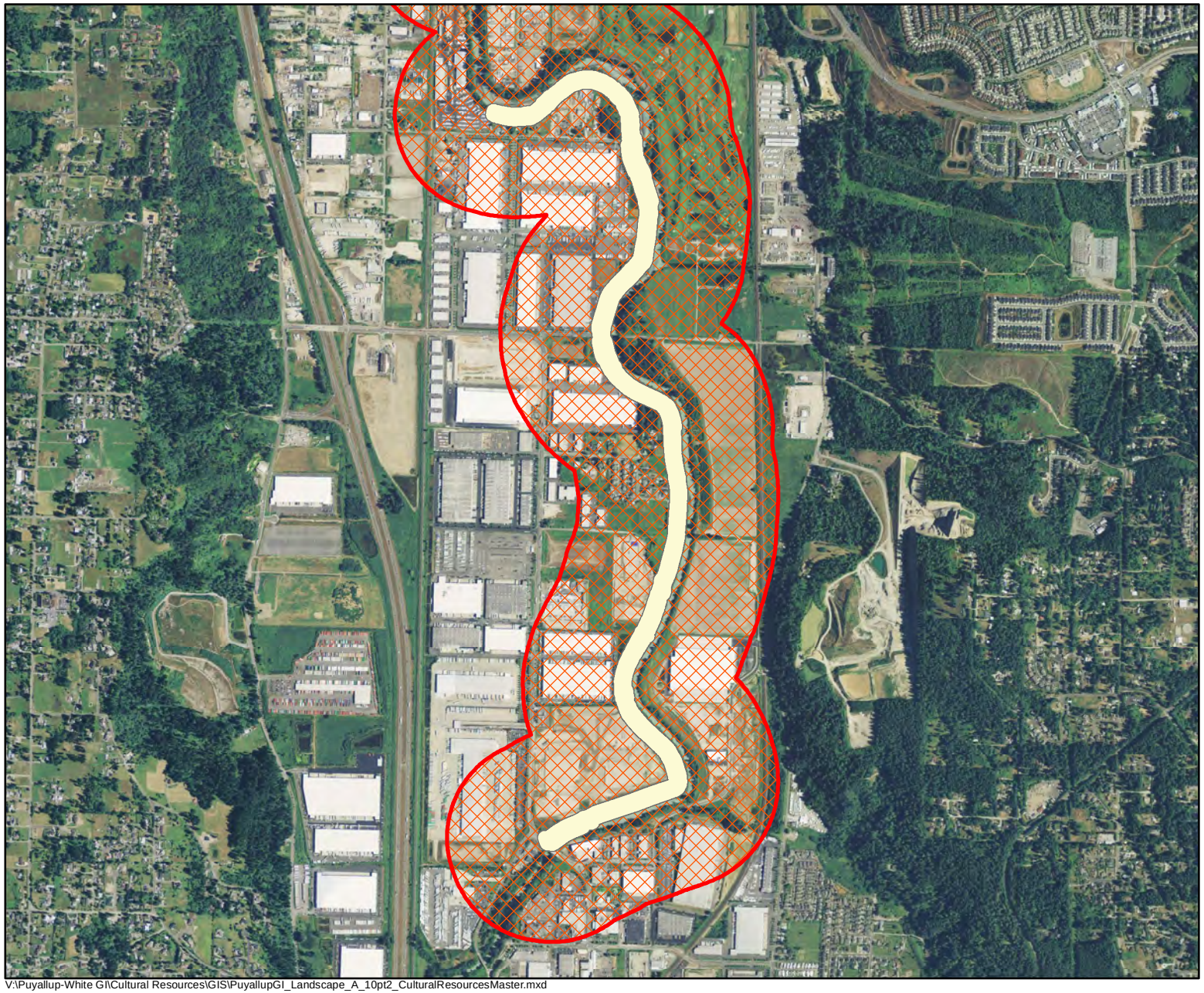
MAP 12

Puyallup General Investigation and Feasibility Study



Legend

Area of Potential Effect 100'/ 1320' Buffered Segments

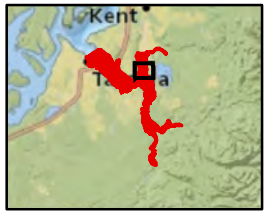
- Levee Removal

APE - 100' Buffered Footprint

NAME

- Butte Ave Levee
- HWY 410 Floodwall
- HWY 410 Levee
- Jones Levee Raise in Place
- Lowev White River Levee
- North Levee Road Setback
- Pacific Park Levee
- Puyallup Left Bank Federal Levee
- Puyallup Right Bank Federal Levee
- River Road Levee Floodwall
- Riverwalk Levee
- APE - 1320' Buffered Footprint

Location Map



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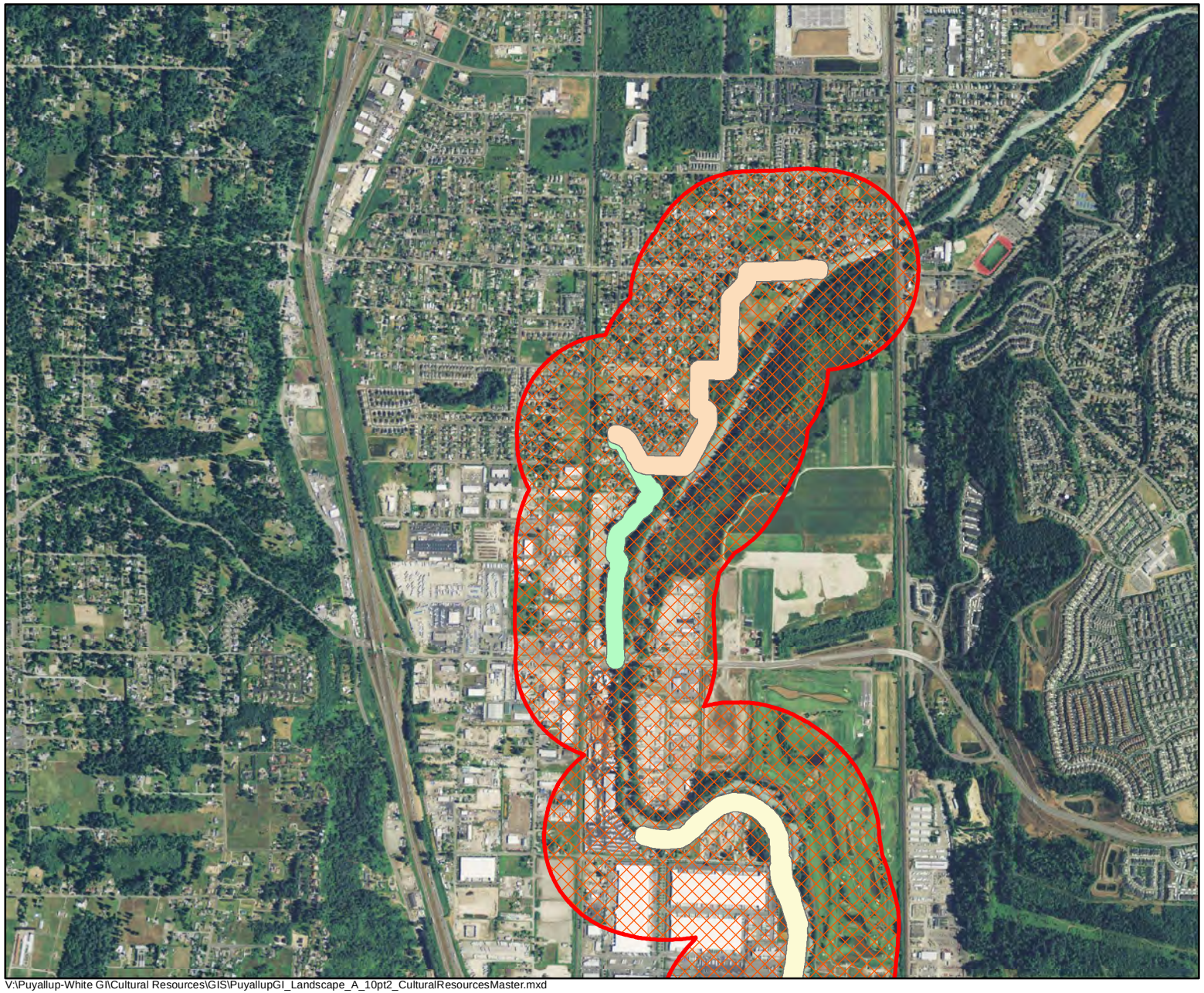
MAP 13

Puyallup General Investigation and Feasibility Study



Legend

Area of Potential Effect 100'/ 1320' Buffered Segments

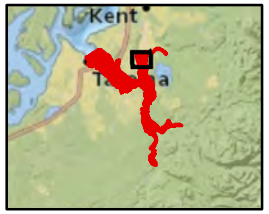
- Levee Removal

APE - 100' Buffered Footprint

NAME

- Butte Ave Levee
- HWY 410 Floodwall
- HWY 410 Levee
- Jones Levee Raise in Place
- Lowev White River Levee
- North Levee Road Setback
- Pacific Park Levee
- Puyallup Left Bank Federal Levee
- Puyallup Right Bank Federal Levee
- River Road Levee Floodwall
- Riverwalk Levee
- APE - 1320' Buffered Footprint

Location Map



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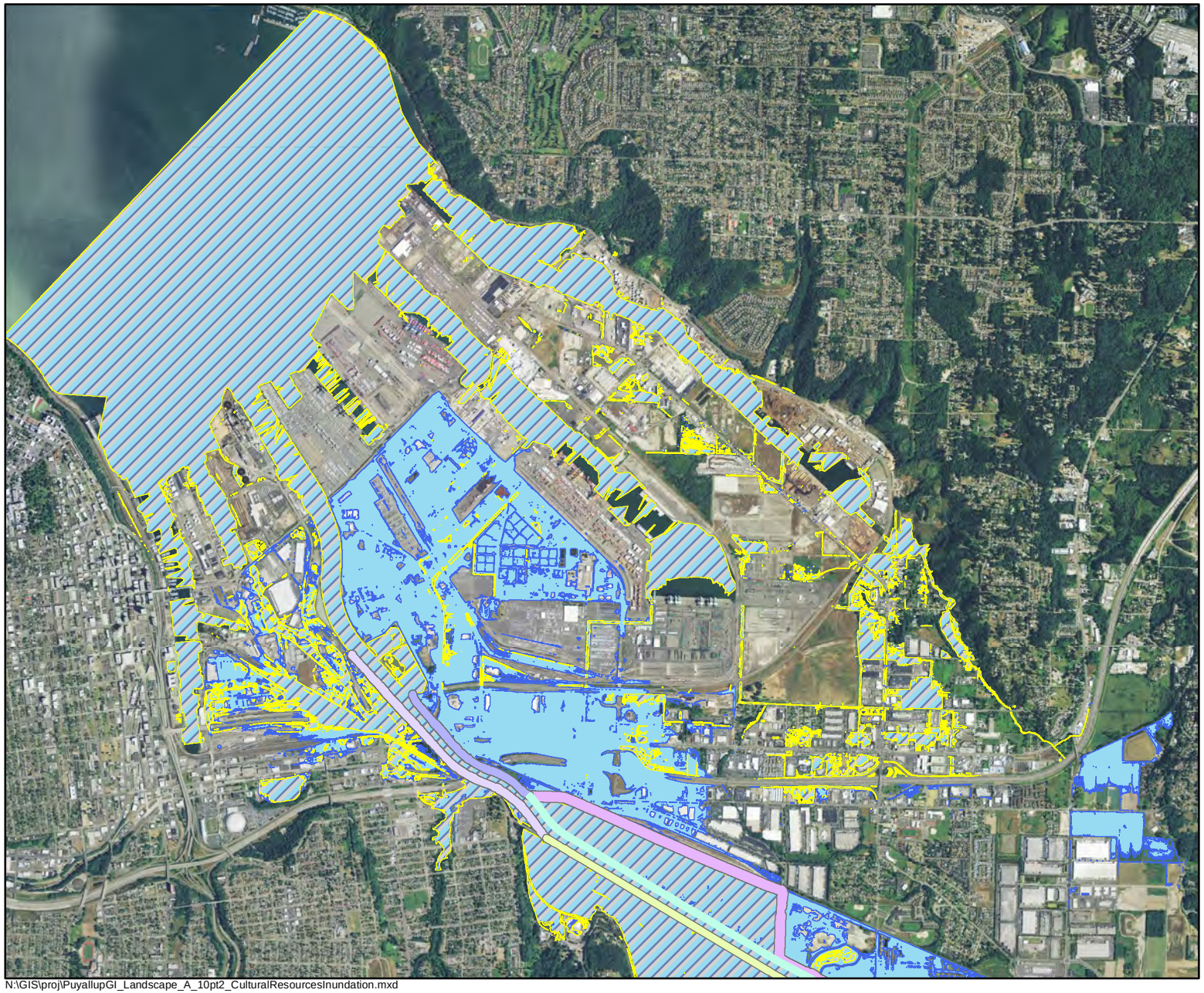
MAP 14

Puyallup General Investigation and Feasibility Study



Legend

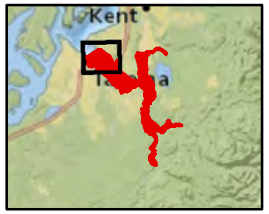
Flood Inundation Comparison
Without and With Project
1% ACE - 100 Year Flood

- Levee Removal

APE - 100' Buffered Footprint

- Butte Ave Levee
- HWY 410 Floodwall
- HWY 410 Levee
- Jones Levee Raise in Place
- Lowev White River Levee
- North Levee Road Setback
- Pacific Park Levee
- Puyallup Left Bank Federal Levee
- Puyallup Right Bank Federal Levee
- River Road Levee Floodwall
- Riverwalk Levee
- Puyallup GI - 100 Year Flood Future With Project
- Puyallup GI - 100 Year Flood Future Without Project Max Breach

Location Map



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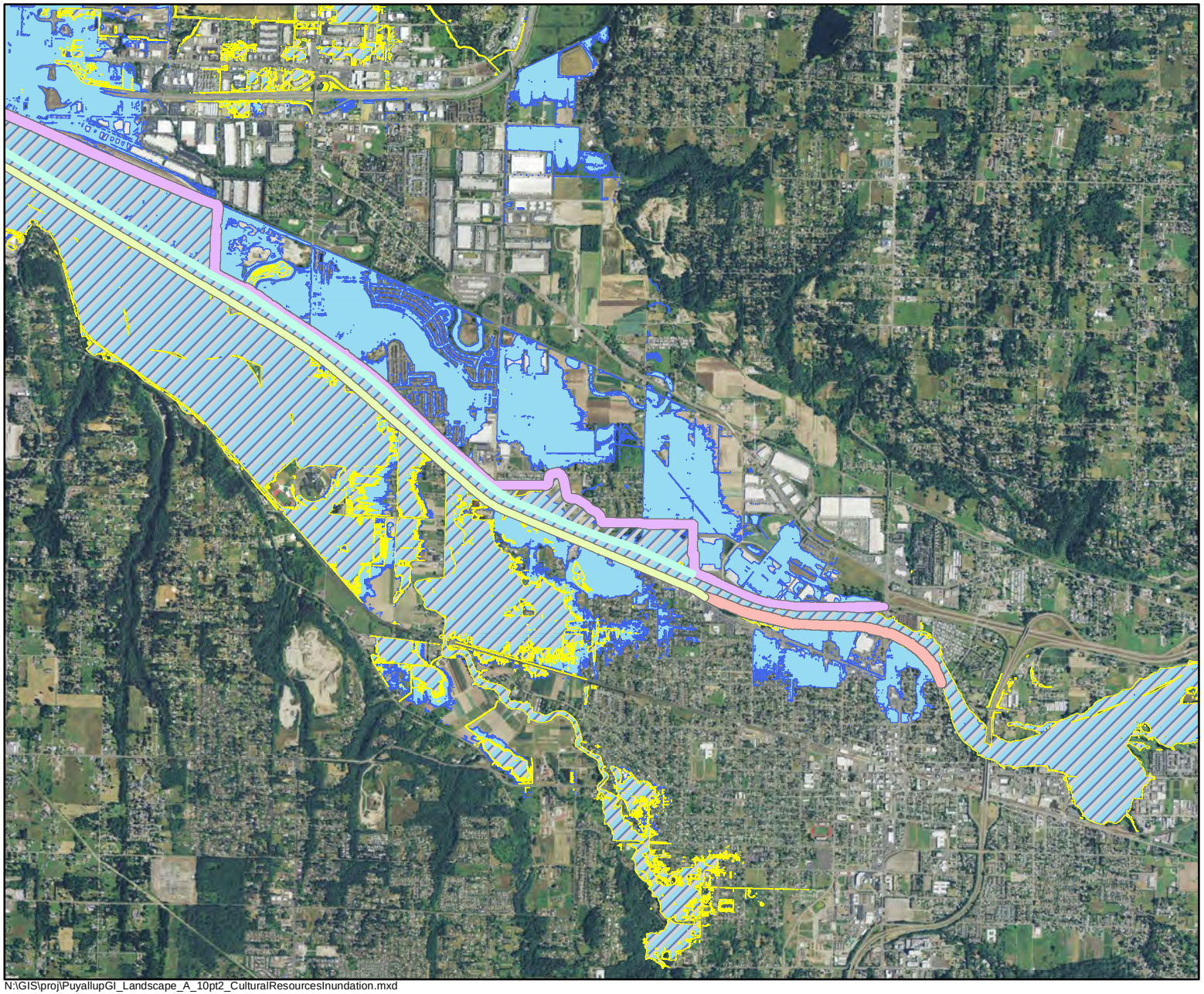
MAP 15

Puyallup General Investigation and Feasibility Study



Legend

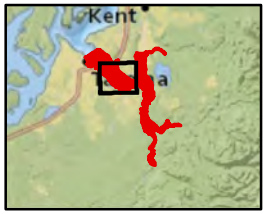
Flood Inundation Comparison
Without and With Project
1% ACE - 100 Year Flood

- Levee Removal

APE - 100' Buffered Footprint

- Butte Ave Levee
- HWY 410 Floodwall
- HWY 410 Levee
- Jones Levee Raise in Place
- Lowev White River Levee
- North Levee Road Setback
- Pacific Park Levee
- Puyallup Left Bank Federal Levee
- Puyallup Right Bank Federal Levee
- River Road Levee Floodwall
- Riverwalk Levee
- Puyallup GI - 100 Year Flood Future With Project
- Puyallup GI - 100 Year Flood Future Without Project Max Breach

Location Map



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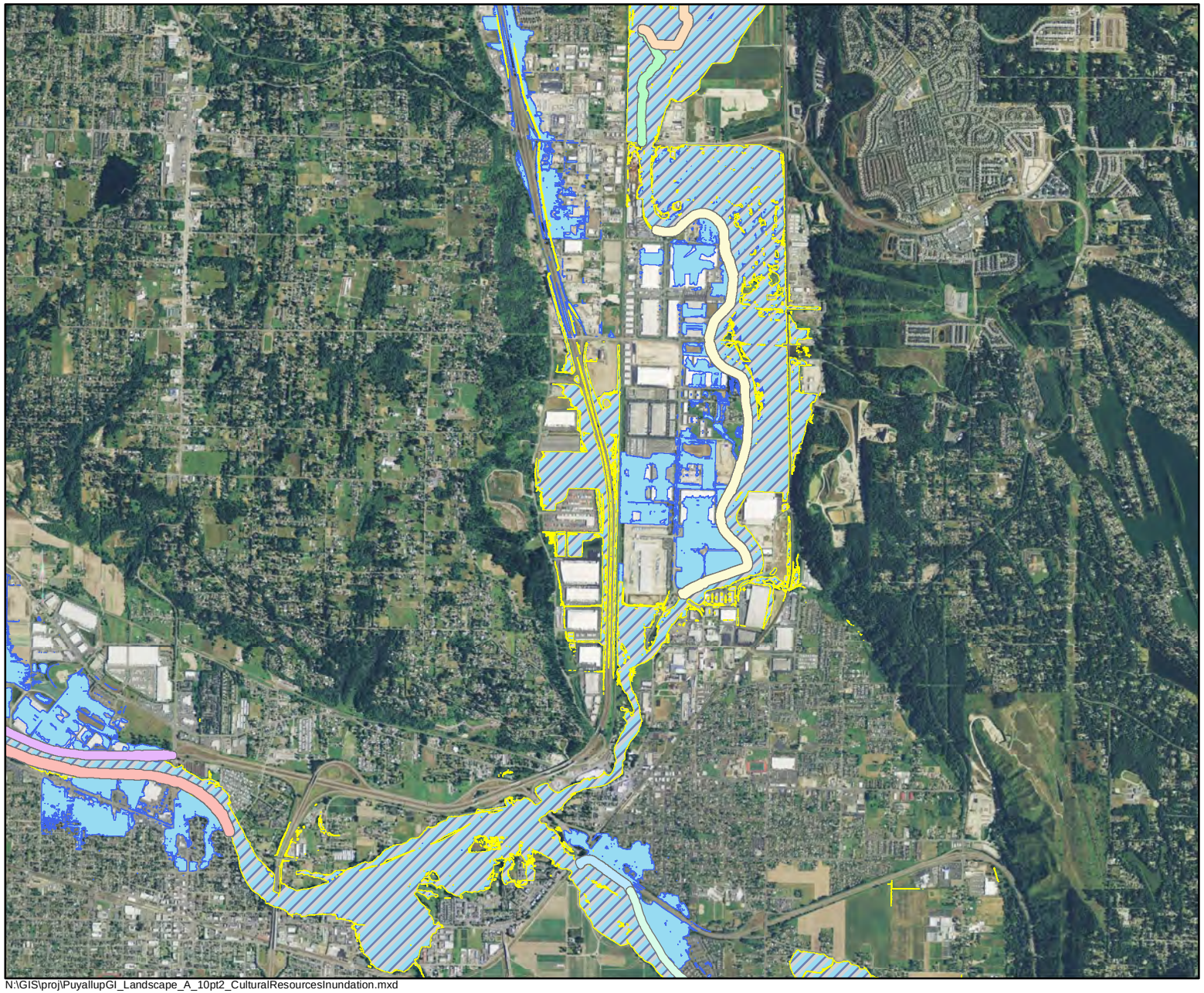
MAP 16

Puyallup General Investigation and Feasibility Study



Legend

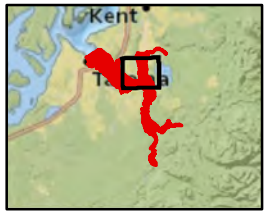
Flood Inundation Comparison
Without and With Project
1% ACE - 100 Year Flood

- Levee Removal

APE - 100' Buffered Footprint

- Butte Ave Levee
- HWY 410 Floodwall
- HWY 410 Levee
- Jones Levee Raise in Place
- Lowev White River Levee
- North Levee Road Setback
- Pacific Park Levee
- Puyallup Left Bank Federal Levee
- Puyallup Right Bank Federal Levee
- River Road Levee Floodwall
- Riverwalk Levee
- Puyallup GI - 100 Year Flood Future With Project
- Puyallup GI - 100 Year Flood Future Without Project Max Breach

Location Map



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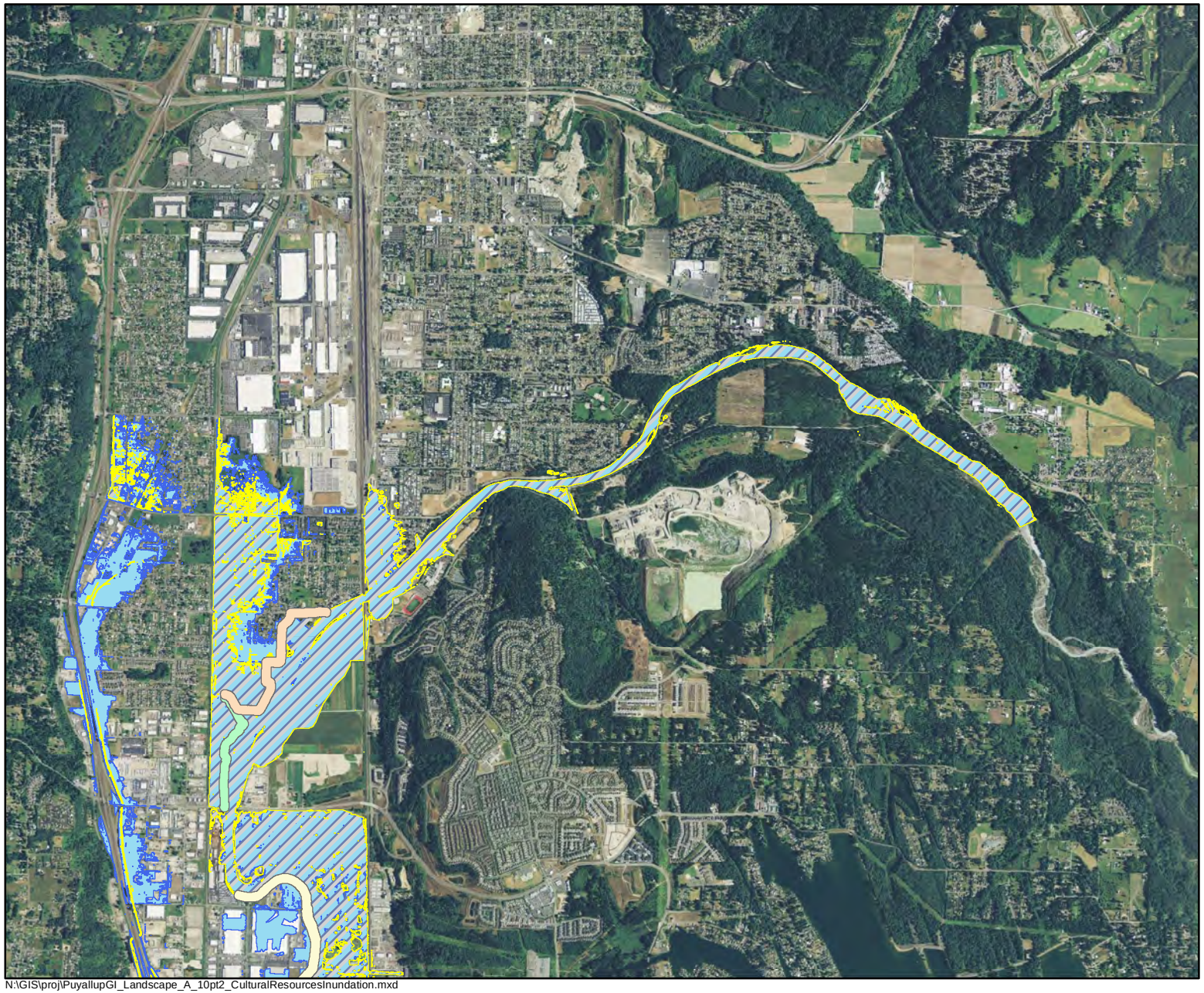
MAP 17

Puyallup General Investigation and Feasibility Study



Legend

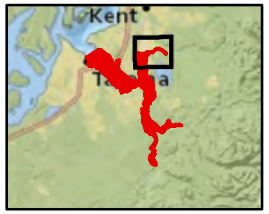
Flood Inundation Comparison
Without and With Project
1% ACE - 100 Year Flood

- Levee Removal

APE - 100' Buffered Footprint

- Butte Ave Levee
- HWY 410 Floodwall
- HWY 410 Levee
- Jones Levee Raise in Place
- Lowev White River Levee
- North Levee Road Setback
- Pacific Park Levee
- Puyallup Left Bank Federal Levee
- Puyallup Right Bank Federal Levee
- River Road Levee Floodwall
- Riverwalk Levee
- Puyallup GI - 100 Year Flood Future With Project
- Puyallup GI - 100 Year Flood Future Without Project Max Breach

Location Map



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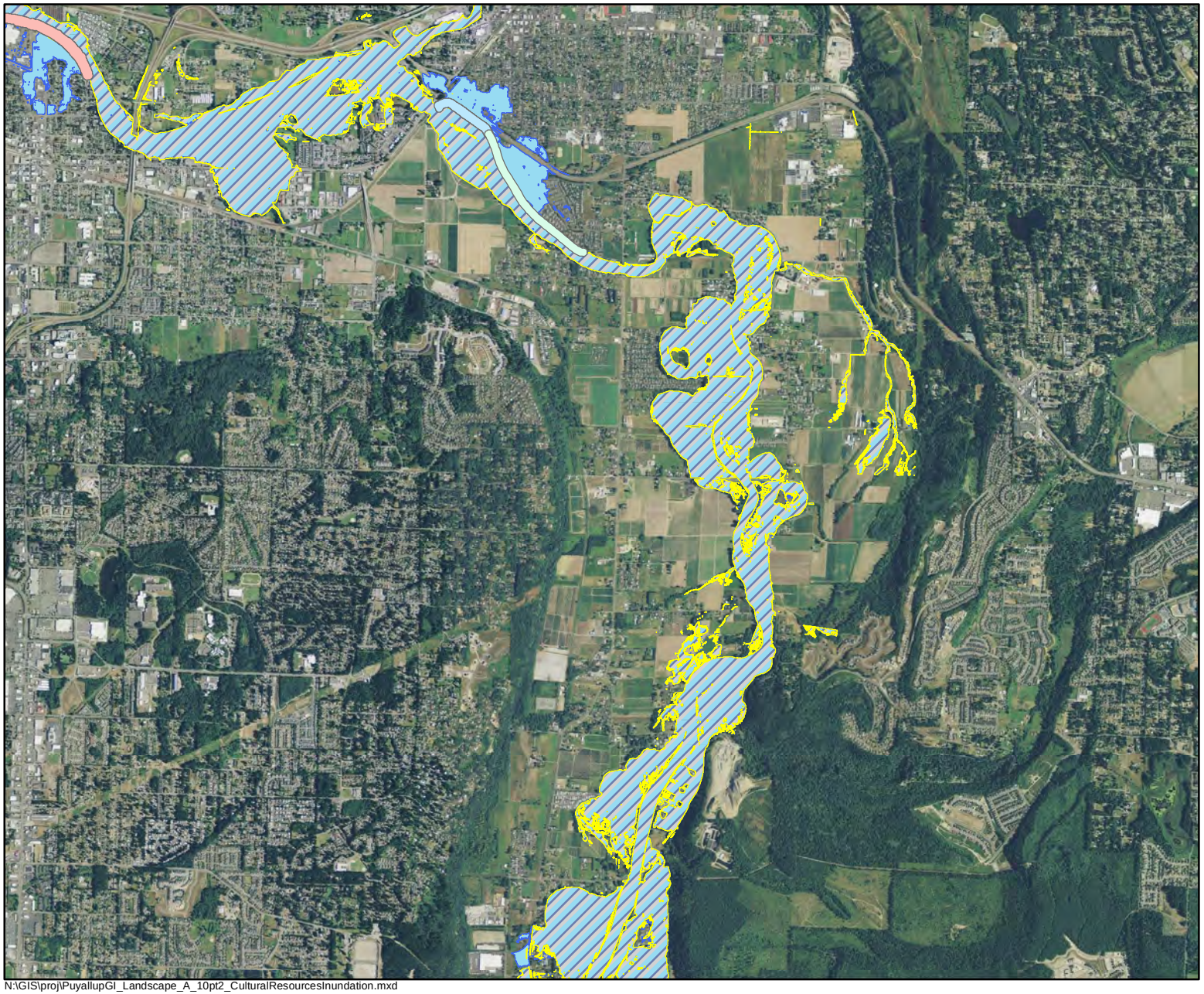
MAP 18

Puyallup General Investigation and Feasibility Study



Legend

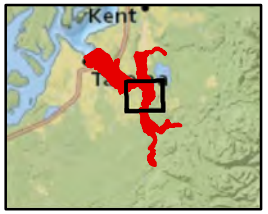
Flood Inundation Comparison
Without and With Project
1% ACE - 100 Year Flood

- Levee Removal

APE - 100' Buffered Footprint

- Butte Ave Levee
- HWY 410 Floodwall
- HWY 410 Levee
- Jones Levee Raise in Place
- Lowev White River Levee
- North Levee Road Setback
- Pacific Park Levee
- Puyallup Left Bank Federal Levee
- Puyallup Right Bank Federal Levee
- River Road Levee Floodwall
- Riverwalk Levee
- Puyallup GI - 100 Year Flood Future With Project
- Puyallup GI - 100 Year Flood Future Without Project Max Breach

Location Map



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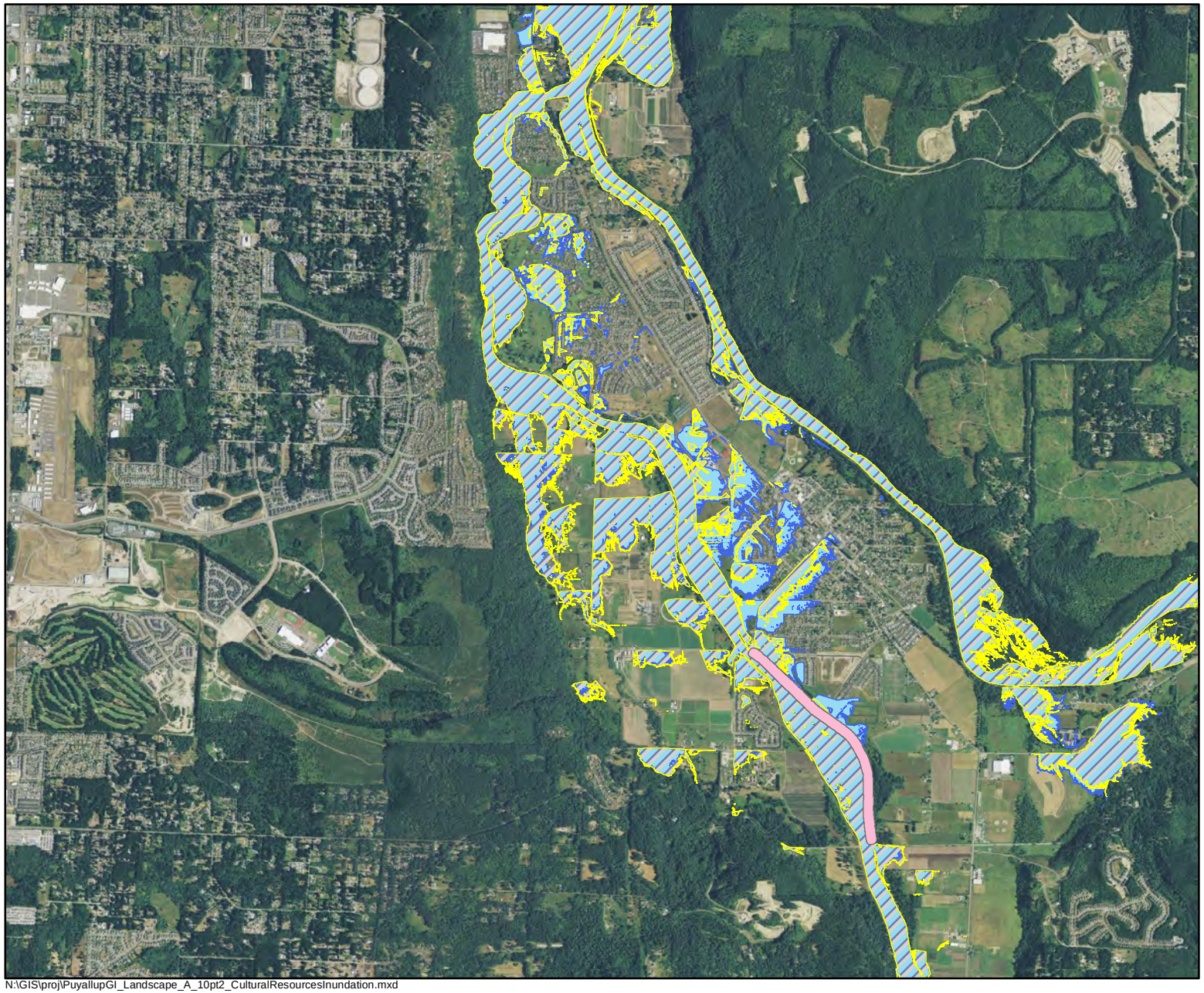
MAP 19

Puyallup General Investigation and Feasibility Study



Legend

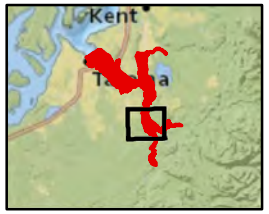
Flood Inundation Comparison
Without and With Project
1% ACE - 100 Year Flood

- Levee Removal

APE - 100' Buffered Footprint

- Butte Ave Levee
- HWY 410 Floodwall
- HWY 410 Levee
- Jones Levee Raise in Place
- Lowev White River Levee
- North Levee Road Setback
- Pacific Park Levee
- Puyallup Left Bank Federal Levee
- Puyallup Right Bank Federal Levee
- River Road Levee Floodwall
- Riverwalk Levee
- Puyallup GI - 100 Year Flood Future With Project
- Puyallup GI - 100 Year Flood Future Without Project Max Breach

Location Map



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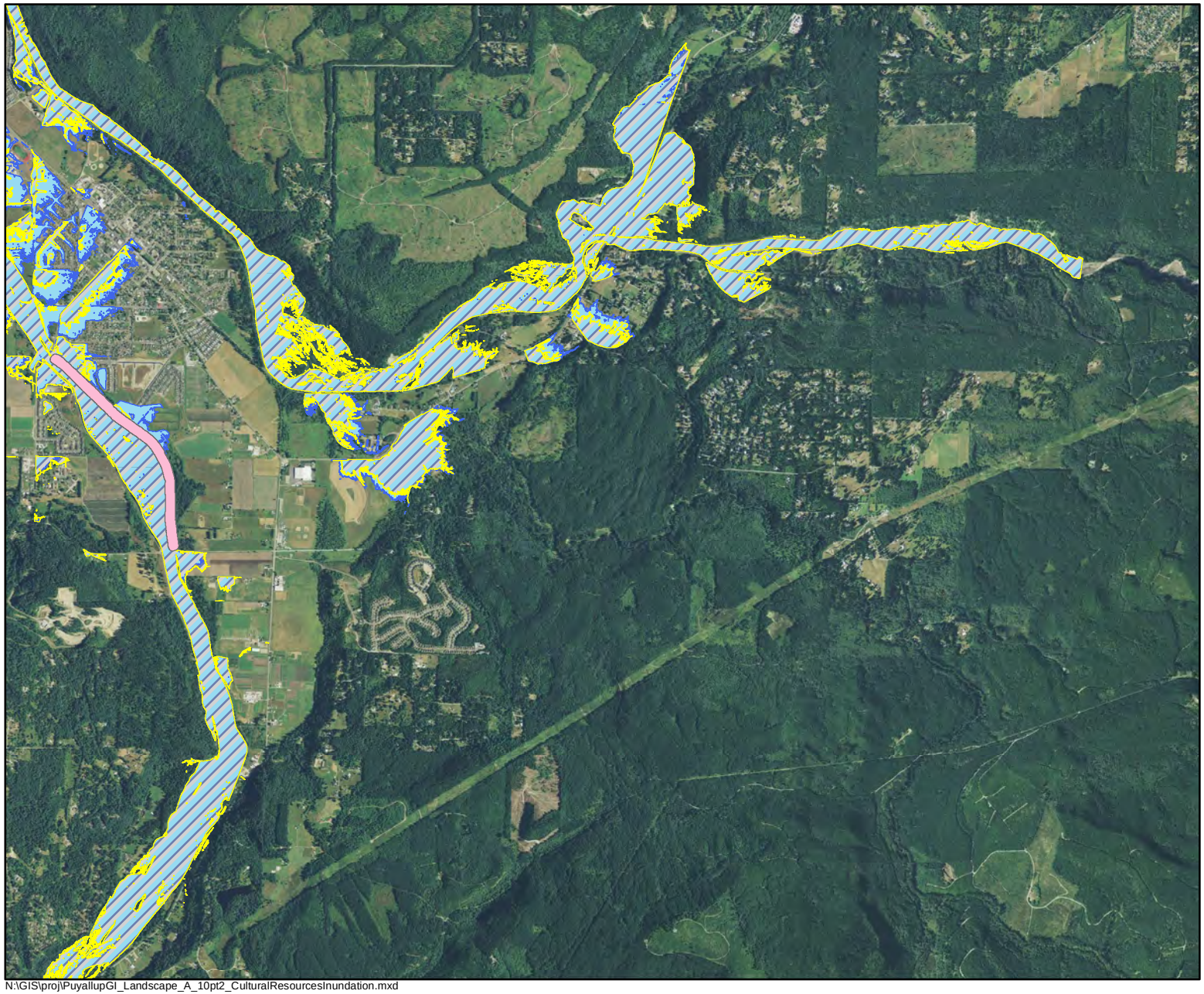
MAP 20

Puyallup General Investigation and Feasibility Study



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Flood Inundation Comparison
Without and With Project
1% ACE - 100 Year Flood

- Levee Removal

APE - 100' Buffered Footprint

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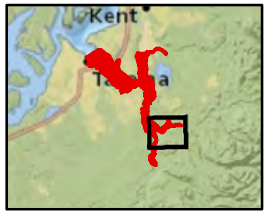
- River Road Levee Floodwall
- Riverwalk Levee
- Puyallup GI - 100 Year Flood Future With Project
- Puyallup GI - 100 Year Flood Future Without Project Max Breach

Location Map



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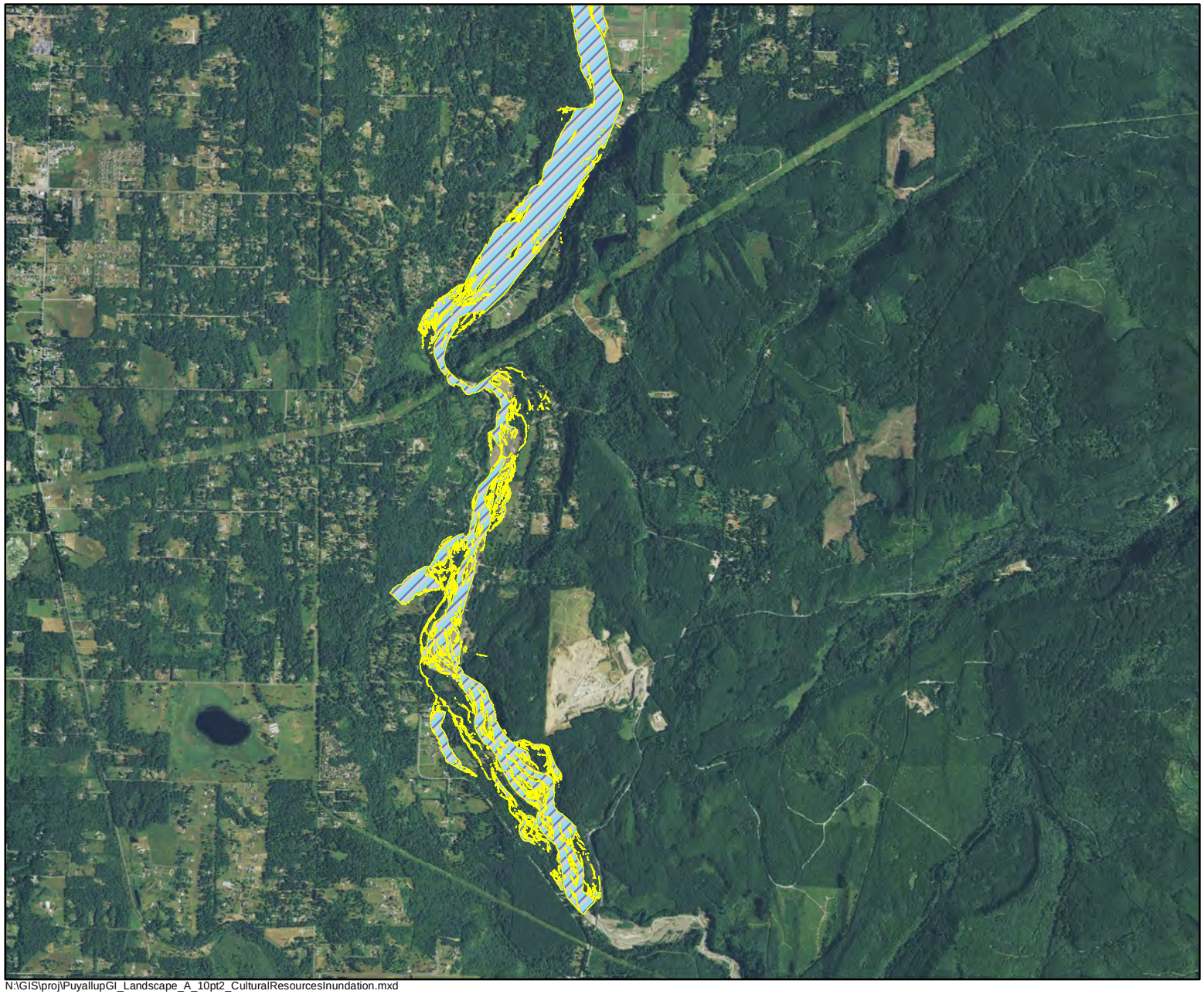
MAP 21

Puyallup General Investigation and Feasibility Study



Legend

Flood Inundation Comparison
Without and With Project
1% ACE - 100 Year Flood

- Levee Removal

APE - 100' Buffered Footprint

- Butte Ave Levee
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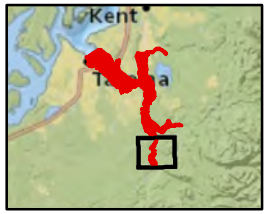
- Puyallup GI - 100 Year Flood Future Without Project Max Breach

Location Map



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Allyson Brooks Ph.D., Director
State Historic Preservation Officer

December 15, 2015

Mr. Evan R. Lewis
Environmental Resources Section
Corps of Engineers – Seattle District
PO Box 3755
Seattle, Washington 98124-3755

Re: Puyallup River Flood Risk MGI & Feasibility Study Project
Log No.: 0121015-35-COE-S

Dear Mr. Lewis:

Thank you for contacting our department. We have reviewed the materials you provided for the Area of Potential Effect (APE) for the proposed Puyallup River Flood Risk MGI & Feasibility Study Project in King and Pierce Counties, Washington

We concur with your definition of the Area of Potential Effect (APE) as detailed in this initial consultation with the recognition that further design and analysis may change the APE.

We concur with your decision to undertake the development of a Programmatic Agreement (PA) given the complex, multiyear effort, and design changes that are anticipated.

We look forward to further consultations on the development of the PA and associated studies and documents..

We would also appreciate receiving any correspondence or comments from concerned tribes or other parties that you receive as you consult under the requirements of 36CFR800.4(a)(4).

These comments are based on the information available at the time of this review and on behalf of the State Historic Preservation Officer in compliance with the Section 106 of the National Historic Preservation Act, as amended, and its implementing regulations 36CFR800.4. Should additional information become available, our assessment may be revised. Thank you for the opportunity to comment.

Sincerely,

Robert G. Whitlam, Ph.D.
State Archaeologist
(360) 890-2615
email: *rob.whitlam@dahp.wa.gov*

DEPARTMENT OF THE ARMY
SEATTLE DISTRICT, CORPS OF ENGINEERS
P.O. BOX 3755
SEATTLE, WASHINGTON 98124-3755

REPLY TO
ATTENTION OF

FEB 0 2 2016

Environmental and Cultural Resources Branch

The Honorable JoDe L. Goudy, Chairman
Confederated Tribes and Bands of the Yakama Nation
P.O. Box 151
Toppenish, WA 98948

Dear Chairman Goudy,

The Seattle District, U. S. Army Corps of Engineers (Corps) is following up on our letter of January 19, 2016, regarding the Puyallup River Basin Flood Risk Management General Investigation (GI) Feasibility Study (Study). The purpose of this letter is to consult on the actions proposed in the Study and the process by which the Corps will manage review under Section 106 of the National Historic Preservation Act (NHPA). This letter provides the background and purpose of the Study, describes the specific actions proposed in the agency Preliminary Tentatively Selected Plan (TSP), and defines the area of potential effect (APE) within the context of the Corps' general investigation/feasibility study planning process. To assist in our review, we are consulting with you about the project, requesting your assistance in identifying any issues or concerns you might have, and specifically seeking information about properties which may be of religious or cultural significance that may be affected by actions proposed in the Study as specified by the implementing regulations for Section 106 of the National Historic Preservation Act at 36 C.F.R. § 800.4(a)(4). In addition, the Corps has concluded that a phased process is required to complete identification and evaluation of historic properties for the Study, including the partial deferment of identification and evaluation until the specific aspects or locations of the Preliminary TSP are more fully defined. As provided at 36 CFR § 800.4(b)(2), the Corps has determined that a Programmatic Agreement (PA) is the appropriate means to manage a phased review process for Section 106. We are inquiring whether the Tribe would like to participate in consultation on the PA as a consulting party. The PA would describe the phased process, including level of effort for inventory and evaluation, partial deferment of identification, evaluation, and assessment of effects to historic properties, and measures taken to avoid, minimize or mitigate effects to historic properties.

Study Background and Purpose

The Study is authorized under Section 209 of the *Flood Control Act (FCA) of 1962* (Public Law 87-874) and Study Resolution, Docket 2645, Committee on Transportation

and Infrastructure, U.S. House of Representatives, dated 21, June 2000[11]. The study area is comprised of the floodplains of the major populated tributaries within the Puyallup River Basin, which includes the Puyallup River, White River and Carbon River (Map 1). The study area is primarily located in Pierce County, Washington with the exception of a portion of the study area north of the main stem of the White River located in King County. The Puyallup River drains the northwest slope of Mt. Rainier and flows northwesterly for approximately 50 miles before discharging into Commencement Bay in the city of Tacoma, Washington. The White River drains the northeastern slope of Mt. Rainier and flows in a general northwest direction for about 50 miles before turning southward and entering the Puyallup River from the north at River Mile (RM) 10.3. The White River is the largest tributary to the Puyallup River. Mud Mountain Dam (MMD), a federally authorized flood control project, is located at RM 29.6 on the White River. The Carbon River originates on the north face of Mt. Rainier at the Carbon Glacier and enters the Puyallup River at RM 17.3.

The Puyallup River Basin includes the cities of Tacoma, Fife, Puyallup, Sumner, Auburn, and Orting, and drains a watershed of approximately 1,040 square miles. Existing development in the floodplain within the Puyallup River study area includes residential development, industrial and commercial development, critical infrastructure such as schools and water treatment plants, and major transportation infrastructure, including Interstate 5, railroad lines and the Port of Tacoma.

The study area includes twenty-eight levee segments currently in the U.S. Army Corps of Engineers National Levee Database (NLD). This includes twenty-six non-federal levees and two federally owned and operated levees. The river hydrology is also modified by MMD. MMD was authorized as Mud Mountain Reservoir by the *Flood Control Act of 22 June 1936, 74th Congress, 2nd Session.* The Flood Control Act of 1938 provided for operation and maintenance (O&M) of the project by the Corps and the *Flood Control Act of 1944* authorized construction and O&M of recreational facilities. In addition, the *Flood Control Act of June 28, 1938* provided for the construction and maintenance of a channel conveyance project on the Lower Puyallup River. Completed in 1950, the federally constructed and maintained levees were built from RM 0.7 to RM 2.8 on the Lower Puyallup River and were authorized as a companion project to MMD.

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[11] The study resolution states "*...That the Secretary of the Army is requested to review the report of the Chief of Engineers on the Upper Puyallup River, Washington, dated 1936, as referenced in the Flood Control Act of 1936 (P.L. 74-738), the Puget Sound and Adjacent Waters Study, authorized by Section 209 of the Rivers and Harbors Act of 1962 (P.L. 87-874) and other pertinent reports to determine whether modifications to the recommendations contained therein are advisable, with references toward providing improvements in the interest of water resource and watershed issues affecting Lake Tapps and the White River Watershed downstream of Mud Mountain Dam, Washington.*" The referenced 1936 report included the entire Puyallup watershed, including the Puyallup River and tributaries such as the White River and Carbon River.

The levees are 2.1 miles in length on the left and right banks and allow for an in-channel conveyance capacity of 50,000 cubic feet per second (cfs).

Major flood events since the construction of MMD have occurred in the Puyallup Basin in 1990, 1996, 2006, and 2009. Although other floods have produced higher peak flows at different points throughout the basin, the flood of February 1996 was the worst basin-wide (as well as regional) flood event seen in recent times. The peak flow at Puyallup, WA was approximately 47,000 cfs. Total costs in damages to Pierce County and surrounding local jurisdictions for this event were estimated to be over $40 million. The flood of record (based on peak flow) in the lower Puyallup occurred in December of 1933, prior to the construction of MMD. This event produced a peak flow (as recorded by U.S. Geological Survey gage 12101500) of 57,000 cfs at Puyallup WA. This value could have been even higher as this event exceeded the channel capacity resulting in water in the floodplain that could not be measured by the stream gage. The 1933 flood event was a catalyst for the planning, authorization and construction of MMD.

The Puyallup Basin contains a patchwork of locally constructed and maintained levee systems on each of the tributaries. Most of the local levees were constructed during a period between the 1910's and the 1930's and many have been repaired, realigned, or otherwise modified in the ensuing decades. Due to the age and condition of the infrastructure, reliability of flood risk management works is of critical concern to the Study sponsor, Pierce County. Major flood events in 1996, 2006, and 2009 resulted in overtopping, scour, and breaching of levees throughout the basin prompting significant repair costs and maintenance activities at a local level.

Agency Preliminary Tentatively Selected Plan (TSP): Proposed Flood Risk Management Actions

The Corps is completing the initial steps of the planning process, which will be documented in a Draft Integrated Feasibility Report and Environmental Impact Statement (FR/EIS). Actual footprints are still being formulated and may be adjusted as the study progresses through the feasibility-level design analysis that will be documented in a Final Integrated FR/EIS before completion of the feasibility study. The feasibility-level design analysis will be informed by comments received during concurrent public, technical, legal, and policy reviews of the Draft Integrated FR/EIS. The Study is currently in the Comparison of Alternative Plans Phase of the Planning Process. The Corps has identified a Preliminary TSP and is in the process of identifying a Tentatively Selected Plan (TSP) (Map 1A). Two alternatives were identified in the Study in addition to a No Action alternative. The Preliminary TSP is referred to as the Levee Modifications Alternative, which is the alternative described further in this letter for purposes of defining the APE for Section 106. The other alternative (Levee

Modifications with Sediment Management Alternative) is not preferred due to its increased impacts to significant resources, mitigation needs, operation and maintenance costs, and the fact that it does not reduce flood risks as well as the Preliminary TSP over the planning timeframe. The No Action Alternative is not preferred because it does not reduce flood risks, but rather, flood risks would increase throughout the planning timeframe.

The intent of the actions proposed in the Preliminary TSP is to modify the existing levee system to manage flood risk by setting back levees, increasing existing levee heights, improving existing levee reliability, or constructing new levees. The proposed levee modifications are the primary flood risk management features and would work with other existing flood risk management features to reduce flood risk within the study area. Actual levee alignments, footprints, or alternative measures will be better refined and sited during subsequent phases of the feasibility study and during pre-construction and engineering design process.

The specific actions currently in the preliminary TSP are described below for each reach of the Puyallup River. Due to the configuration of the Puyallup River, the river is described for purposes of the study as the Lower Puyallup River (approximately RM 0.0 – RM 10.3), Middle Puyallup River (approximately RM 10.3 – RM 17.4) and Upper Puyallup River RM (approximately 17.4 – RM 29.6). A general overview is provided in Map 1A and Maps 2 through 6.

Lower Puyallup River (RM 0.0 – RM 10.3)

Federal Authorized Levees (Left and Right Bank): The Federal Authorized Levees (FAL) extend from RM 0.7 to RM 2.7 on the right bank and RM 0.7 to RM 2.9 on the left bank. The Preliminary TSP proposes to raise sections of the left and right banks of the FAL along the Lower Puyallup River (Map 7). The authorized capacity of the Federal Levees is 50,000 cfs, which was intended to provide protection to the 1% annual chance of exceedance (ACE) flood event[12]. The proposed modifications to the Federal Levees include: the right bank levee would be raised from RM 2.0 to 2.7, and the FAL left bank levee would be raised from RM 1.5 to 2.9.

[12] In Corps reports dealing with flood risk management, the risk of an individual storm or flood event occurring is expressed as the annual chance of exceedance (ACE), which is the probability that the specified discharge, or flood event, could be equaled or exceeded during any given year. A "1% ACE flood" has in the past commonly been referred to as a "100-yr flood". The occurrence of a specific ACE flood in one year, does not alter its ACE in the next year. Many documents, along with maps and other supporting materials, use "x-year flood" expressions, in which the number of years is sometimes known as "the return interval." (See Figure 1)

North Levee Road A- Setback: The Preliminary TSP proposes setting back the North Levee Road levee on the right bank of the Lower Puyallup River extending from ~RM 3.0 to the end of the North Levee Road at RM 8 (Maps 7, 8, and 9). In the Preliminary TSP, the levee would be setback from ~RM 3.0 to ~RM 4.0 (Frank Albert Road) approximately 1,000 feet, from ~RM 4.0 to RM 6.0 approximately 80 to 100 feet, from RM 6.0 to RM 7.1 approximately 600 feet, and from RM 7.0 to RM 8.0 approximately 80 to 100 feet. The setback levee alignment is approximately 32,000 linear feet with approximate levee heights ranging from 6 to15 feet. The proposed levee modification would manage flood risks to residential, commercial and industrial properties. The existing levee would be removed and the material re-used in the setback levee.

River Road Levee Floodwall: The Preliminary TSP considers adding a flood wall along the River Road Levee on the left bank of the Lower Puyallup River extending from approximately RM 3.0 to RM 7.0 (Map 9). This floodwall would reduce risks to the transportation corridor and residential, commercial and industrial structures. The floodwall height would range from 4 to 8 feet, with the average of about 6 feet.

Lower Puyallup River Extension Levee (OR Floodwall): The Preliminary TSP considers extending the levee on the left bank of the Lower Puyallup River from RM 7.2 to RM 8.6 (Map 9). The new extension levee would be approximately 7,200 feet long and would incorporate about 1,100 feet of the existing River Road Levee. The levee height would vary between 8 and 13 feet. In areas where the levee is currently approximately 8 feet tall, there would be about 3.5 feet of additional fill placed on the existing levee.

White River (Puyallup River RM 10.3 / White River RM 0.0 to RM 29.6)

New Levees - Pacific Park Levee / Butte Avenue Levee / Lower White River Levee: The Preliminary TSP proposes new levees along the right bank of the White River to manage flood risks to residential, commercial, and industrial properties. The new levees would extend from ~RM 2.0 to RM 4.5 and ~RM 5.0 to 6.0 at Pacific Park (Maps 12 and 13).

Property Acquisition: The Preliminary TSP proposes that the non-Federal sponsor will acquire 35 acres of property RM 4.5 to RM 5.0 along the left bank of the White River. These properties have experienced repetitive flood impacts and are at risk to additional adverse flood impacts.

Middle Puyallup River (RM 10.3 – RM 17.4)

HWY 410 Floodwall and Levee: The Preliminary TSP proposes adding a combination of a new levee and floodwall that would provide protection to the adjacent SR 410 and residential properties. The levee section is proposed between ~RM 10.5 and 11.0 and the floodwall would be located between RM 11.0 to 12.0 (Map 10). The height of the levee and floodwall would vary between 6 and 12 feet.

Upper Puyallup River (RM 17.4 – RM 28.6)

Jones Levee Improvement: The Jones Levee extends from approximately RM 21.0 to RM 22.5, along the right bank of the Upper Puyallup River (Map 11). The Preliminary TSP proposes to modify the levee in place by increasing the levee heights approximately 1.5 feet to 6.5 feet as well as improving the riverside erosion protection. This levee modification would also include a flow deflector design extending into the Ford Levee.

Area of Potential Effect (APE)

For the general investigation/feasibility study planning effort, the Corps is still involved in the feasibility level of design. Design and engineering is still conceptual and actual construction footprints are still being formulated and may change. Though a design change may alter the APE as described, the general parameters and buffers for any subsequent APE would remain for the proposed action.

In consultation with the Washington State Historic Preservation Officer, the Corps has determined the APE for purposes of Section 106 review. For direct effects, the Corps has established a buffered APE that would extend out 100 feet around the proposed construction footprint of new levees, raised levees, setback levees, and any other required construction action, including levee removal, road relocations, staging areas and fill areas as they are identified. For indirect effects resulting from flood inundation, the Corps has defined the APE to extend to the damage reach boundaries for flood inundation for a 1% ACE flood event (Maps 14 through 21). Within that area, the Corps would correlate existing cultural resources information and information gathered through consultation and compare the baseline without any action against the estimated future conditions under the Preliminary TSP to determine whether there are known or recorded resources in areas that might be threatened or affected. Specifically for visual, auditory or atmospheric intrusions, the APE extends to a ¼ mile buffer around new levees, setback levees, floodwalls, or levees that would be raised.

The APE as described considers both direct and indirect effects. The APE is based on current engineering design and construction plans and would be adjusted accordingly should the design or construction plans change. Roads may need to be shifted or relocated due to construction of new levees or expanded levee profiles where levees are raised or improved. However, no specific roads have been identified at this phase of the Study that would be shifted or relocated. Staging and access areas have not been established but would be included in the APE as that information becomes available. The Preliminary TSP has not identified a source for fill material. It is assumed that material from levees proposed for removal would be re-used in construction of the new levees or setback levees or that a commercial source of clean fill would be used. As engineering and design specifications are refined, the APE for direct and indirect effects would be revised as necessary to include all areas required for construction, access, staging, or fill material.

Within the Corps' planning process, feasibility studies emphasize making risk – informed decisions using existing information for planning decisions on overall project feasibility. Detailed studies may be phased as appropriate to pre-construction engineering and design after feasibility is completed. Archaeological surveys or other intensive field investigations normally would not be conducted without access/right-of-way agreements, which would not be pursued unless the project is authorized and funded. Given the parameters of the general investigation/feasibility study planning process, the Corps believes that the APE is sufficient to identify and consider both direct and indirect effects of the undertaking.

In addition to your Tribe, the Corps is identifying and notifying other consulting parties who might be interested in consulting on the Study and participating in the PA, including the SHPO, the Advisory Council on Historic Preservation, other Indian tribes, historic preservation commissions or representatives of certified local governments, and other government agencies and members of the public with a demonstrated interested in cultural, historical or social components of the Puyallup River Flood Risk Management General Investigation and Feasibility Study. We anticipate the PA would: outline a process to continue identification and evaluation of historic properties as the Preliminary TSP is refined and proposed actions are approved and funded; provide for assessment of effects on historic properties, and; address post-review discoveries of archaeological sites and inadvertent discoveries of human remains. The PA may also consider identifying best management practices or standard treatments of certain properties or effects, and the manner in which the Corps will conclude its Section 106 responsibilities for these individual actions.

As noted at the outset, the purpose of this letter is to identify issues or concerns that the Tribe may have regarding cultural resources, and to seek information regarding

properties of religious or cultural significance that may be affected by actions proposed in the Preliminary TSP. We would appreciate hearing from you regarding any issues or properties of concern as soon as possible so that we may consider this information in our analysis. We are also inquiring whether the Tribe would like to participate in consultation on the PA being prepared to comply with Section 106 as provided at 36 C.F.R. § 800.4(b)(2) and 36 C.F.R. § 800.14(b), or if you do not have an interest or wish to consult on this Study. We request that you advise us regarding your interests in the Study and decision whether to participate in consultation on the PA by February 26, 2016.

Copies of this letter and accompanying enclosures are being provided to the following Tribal staff: Ms. Kate Valdez, Tribal Historic Preservation Office.

For more information about the Puyallup general investigation/feasibility study, clarification about this request or any other concerns, please contact Mr. Rolla Queen (Senior Program Archaeologist) at (206) 316-3094 or Rolla.L.Queen@usace.army.mil, or Ms. Lynn Wetzler Dewald (Project Manager) at (206) 764-3695 or Lynn.W.Dewald@usace.army.mil. You may also request a Government-to-Government meeting with us at any time during the Study and we invite you, as a Federally-recognized Tribe, to participate in consultation with the Corps so that your concerns are identified and addressed prior to the Corps making a final decision on project measures. For assistance with general information regarding tribal coordination or to request a Government-to-Government meeting, please contact the Seattle District's Tribal Liaison, Ms. Lori Morris, at (206) 764-3625 or Frances.Morris@usace.army.mil. I can be reached by telephone at (206) 764-6922 or by email at Evan.R.Lewis@usace.army.mil.

Sincerely,

Evan R. Lewis, Chief
Environmental and Cultural Resources Branch

Enclosures

DEPARTMENT OF THE ARMY
SEATTLE DISTRICT, CORPS OF ENGINEERS
P.O. BOX 3755
SEATTLE, WASHINGTON 98124-3755

REPLY TO
ATTENTION OF

FEB 02 2016

Environmental and Cultural Resources Branch

The Honorable David Lopeman, Chairman
Squaxin Island Tribe of the Squaxin Island Reservation
10 SE Squaxin Lane
Shelton, WA 98584-9200

Dear Chairman Lopeman,

The Seattle District, U. S. Army Corps of Engineers (Corps) is following up on our letter of January 19, 2016, regarding the Puyallup River Basin Flood Risk Management General Investigation (GI) Feasibility Study (Study). The purpose of this letter is to consult on the actions proposed in the Study and the process by which the Corps will manage review under Section 106 of the National Historic Preservation Act (NHPA). This letter provides the background and purpose of the Study, describes the specific actions proposed in the agency Preliminary Tentatively Selected Plan (TSP), and defines the area of potential effect (APE) within the context of the Corps' general investigation/feasibility study planning process. To assist in our review, we are consulting with you about the project, requesting your assistance in identifying any issues or concerns you might have, and specifically seeking information about properties which may be of religious or cultural significance that may be affected by actions proposed in the Study as specified by the implementing regulations for Section 106 of the National Historic Preservation Act at 36 C.F.R. § 800.4(a)(4). In addition, the Corps has concluded that a phased process is required to complete identification and evaluation of historic properties for the Study, including the partial deferment of identification and evaluation until the specific aspects or locations of the Preliminary TSP are more fully defined. As provided at 36 CFR § 800.4(b)(2), the Corps has determined that a Programmatic Agreement (PA) is the appropriate means to manage a phased review process for Section 106. We are inquiring whether the Tribe would like to participate in consultation on the PA as a consulting party. The PA would describe the phased process, including level of effort for inventory and evaluation, partial deferment of identification, evaluation, and assessment of effects to historic properties, and measures taken to avoid, minimize or mitigate effects to historic properties.

Study Background and Purpose

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and Infrastructure, U.S. House of Representatives, dated 21, June 2000[9]. The study area is comprised of the floodplains of the major populated tributaries within the Puyallup River Basin, which includes the Puyallup River, White River and Carbon River (Map 1). The study area is primarily located in Pierce County, Washington with the exception of a portion of the study area north of the main stem of the White River located in King County. The Puyallup River drains the northwest slope of Mt. Rainier and flows northwesterly for approximately 50 miles before discharging into Commencement Bay in the city of Tacoma, Washington. The White River drains the northeastern slope of Mt. Rainier and flows in a general northwest direction for about 50 miles before turning southward and entering the Puyallup River from the north at River Mile (RM) 10.3. The White River is the largest tributary to the Puyallup River. Mud Mountain Dam (MMD), a federally authorized flood control project, is located at RM 29.6 on the White River. The Carbon River originates on the north face of Mt. Rainier at the Carbon Glacier and enters the Puyallup River at RM 17.3.

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The study area includes twenty-eight levee segments currently in the U.S. Army Corps of Engineers National Levee Database (NLD). This includes twenty-six non-federal levees and two federally owned and operated levees. The river hydrology is also modified by MMD. MMD was authorized as Mud Mountain Reservoir by the *Flood Control Act of 22 June 1936, 74th Congress, 2nd Session*. The Flood Control Act of 1938 provided for operation and maintenance (O&M) of the project by the Corps and the *Flood Control Act of 1944* authorized construction and O&M of recreational facilities. In addition, the *Flood Control Act of June 28, 1938* provided for the construction and maintenance of a channel conveyance project on the Lower Puyallup River. Completed in 1950, the federally constructed and maintained levees were built from RM 0.7 to RM 2.8 on the Lower Puyallup River and were authorized as a companion project to MMD.

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[9] The study resolution states "*... That the Secretary of the Army is requested to review the report of the Chief of Engineers on the Upper Puyallup River, Washington, dated 1936, as referenced in the Flood Control Act of 1936 (P.L. 74-738), the Puget Sound and Adjacent Waters Study, authorized by Section 209 of the Rivers and Harbors Act of 1962 (P.L. 87-874) and other pertinent reports to determine whether modifications to the recommendations contained therein are advisable, with references toward providing improvements in the interest of water resource and watershed issues affecting Lake Tapps and the White River Watershed downstream of Mud Mountain Dam, Washington.*" The referenced 1936 report included the entire Puyallup watershed, including the Puyallup River and tributaries such as the White River and Carbon River.

The levees are 2.1 miles in length on the left and right banks and allow for an in-channel conveyance capacity of 50,000 cubic feet per second (cfs).

Major flood events since the construction of MMD have occurred in the Puyallup Basin in 1990, 1996, 2006, and 2009. Although other floods have produced higher peak flows at different points throughout the basin, the flood of February 1996 was the worst basin-wide (as well as regional) flood event seen in recent times. The peak flow at Puyallup, WA was approximately 47,000 cfs. Total costs in damages to Pierce County and surrounding local jurisdictions for this event were estimated to be over $40 million. The flood of record (based on peak flow) in the lower Puyallup occurred in December of 1933, prior to the construction of MMD. This event produced a peak flow (as recorded by U.S. Geological Survey gage 12101500) of 57,000 cfs at Puyallup WA. This value could have been even higher as this event exceeded the channel capacity resulting in water in the floodplain that could not be measured by the stream gage. The 1933 flood event was a catalyst for the planning, authorization and construction of MMD.

The Puyallup Basin contains a patchwork of locally constructed and maintained levee systems on each of the tributaries. Most of the local levees were constructed during a period between the 1910's and the 1930's and many have been repaired, realigned, or otherwise modified in the ensuing decades. Due to the age and condition of the infrastructure, reliability of flood risk management works is of critical concern to the Study sponsor, Pierce County. Major flood events in 1996, 2006, and 2009 resulted in overtopping, scour, and breaching of levees throughout the basin prompting significant repair costs and maintenance activities at a local level.

Agency Preliminary Tentatively Selected Plan (TSP): Proposed Flood Risk Management Actions

The Corps is completing the initial steps of the planning process, which will be documented in a Draft Integrated Feasibility Report and Environmental Impact Statement (FR/EIS). Actual footprints are still being formulated and may be adjusted as the study progresses through the feasibility-level design analysis that will be documented in a Final Integrated FR/EIS before completion of the feasibility study. The feasibility-level design analysis will be informed by comments received during concurrent public, technical, legal, and policy reviews of the Draft Integrated FR/EIS. The Study is currently in the Comparison of Alternative Plans Phase of the Planning Process. The Corps has identified a Preliminary TSP and is in the process of identifying a Tentatively Selected Plan (TSP) (Map 1A). Two alternatives were identified in the Study in addition to a No Action alternative. The Preliminary TSP is referred to as the Levee Modifications Alternative, which is the alternative described further in this letter for purposes of defining the APE for Section 106. The other alternative (Levee

Modifications with Sediment Management Alternative) is not preferred due to its increased impacts to significant resources, mitigation needs, operation and maintenance costs, and the fact that it does not reduce flood risks as well as the Preliminary TSP over the planning timeframe. The No Action Alternative is not preferred because it does not reduce flood risks, but rather, flood risks would increase throughout the planning timeframe.

The intent of the actions proposed in the Preliminary TSP is to modify the existing levee system to manage flood risk by setting back levees, increasing existing levee heights, improving existing levee reliability, or constructing new levees. The proposed levee modifications are the primary flood risk management features and would work with other existing flood risk management features to reduce flood risk within the study area. Actual levee alignments, footprints, or alternative measures will be better refined and sited during subsequent phases of the feasibility study and during pre-construction and engineering design process.

The specific actions currently in the preliminary TSP are described below for each reach of the Puyallup River. Due to the configuration of the Puyallup River, the river is described for purposes of the study as the Lower Puyallup River (approximately RM 0.0 – RM 10.3), Middle Puyallup River (approximately RM 10.3 – RM 17.4) and Upper Puyallup River RM (approximately 17.4 – RM 29.6). A general overview is provided in Map 1A and Maps 2 through 6.

Lower Puyallup River (RM 0.0 – RM 10.3)

Federal Authorized Levees (Left and Right Bank): The Federal Authorized Levees (FAL) extend from RM 0.7 to RM 2.7 on the right bank and RM 0.7 to RM 2.9 on the left bank. The Preliminary TSP proposes to raise sections of the left and right banks of the FAL along the Lower Puyallup River (Map 7). The authorized capacity of the Federal Levees is 50,000 cfs, which was intended to provide protection to the 1% annual chance of exceedance (ACE) flood event[10]. The proposed modifications to the Federal Levees include: the right bank levee would be raised from RM 2.0 to 2.7, and the FAL left bank levee would be raised from RM 1.5 to 2.9.

[10] In Corps reports dealing with flood risk management, the risk of an individual storm or flood event occurring is expressed as the annual chance of exceedance (ACE), which is the probability that the specified discharge, or flood event, could be equaled or exceeded during any given year. A "1% ACE flood" has in the past commonly been referred to as a "100-yr flood". The occurrence of a specific ACE flood in one year, does not alter its ACE in the next year. Many documents, along with maps and other supporting materials, use "x-year flood" expressions, in which the number of years is sometimes known as "the return interval." (See Figure 1)

North Levee Road A- Setback: The Preliminary TSP proposes setting back the North Levee Road levee on the right bank of the Lower Puyallup River extending from ~RM 3.0 to the end of the North Levee Road at RM 8 (Maps 7, 8, and 9). In the Preliminary TSP, the levee would be setback from ~RM 3.0 to ~RM 4.0 (Frank Albert Road) approximately 1,000 feet, from ~RM 4.0 to RM 6.0 approximately 80 to 100 feet, from RM 6.0 to RM 7.1 approximately 600 feet, and from RM 7.0 to RM 8.0 approximately 80 to 100 feet. The setback levee alignment is approximately 32,000 linear feet with approximate levee heights ranging from 6 to15 feet. The proposed levee modification would manage flood risks to residential, commercial and industrial properties. The existing levee would be removed and the material re-used in the setback levee.

River Road Levee Floodwall: The Preliminary TSP considers adding a flood wall along the River Road Levee on the left bank of the Lower Puyallup River extending from approximately RM 3.0 to RM 7.0 (Map 9). This floodwall would reduce risks to the transportation corridor and residential, commercial and industrial structures. The floodwall height would range from 4 to 8 feet, with the average of about 6 feet.

Lower Puyallup River Extension Levee (OR Floodwall): The Preliminary TSP considers extending the levee on the left bank of the Lower Puyallup River from RM 7.2 to RM 8.6 (Map 9). The new extension levee would be approximately 7,200 feet long and would incorporate about 1,100 feet of the existing River Road Levee. The levee height would vary between 8 and 13 feet. In areas where the levee is currently approximately 8 feet tall, there would be about 3.5 feet of additional fill placed on the existing levee.

White River (Puyallup River RM 10.3 / White River RM 0.0 to RM 29.6)

New Levees - Pacific Park Levee / Butte Avenue Levee / Lower White River Levee: The Preliminary TSP proposes new levees along the right bank of the White River to manage flood risks to residential, commercial, and industrial properties. The new levees would extend from ~RM 2.0 to RM 4.5 and ~RM 5.0 to 6.0 at Pacific Park (Maps 12 and 13).

Property Acquisition: The Preliminary TSP proposes that the non-Federal sponsor will acquire 35 acres of property RM 4.5 to RM 5.0 along the left bank of the White River. These properties have experienced repetitive flood impacts and are at risk to additional adverse flood impacts.

Middle Puyallup River (RM 10.3 – RM 17.4)

HWY 410 Floodwall and Levee: The Preliminary TSP proposes adding a combination of a new levee and floodwall that would provide protection to the adjacent SR 410 and residential properties. The levee section is proposed between ~RM 10.5 and 11.0 and the floodwall would be located between RM 11.0 to 12.0 (Map 10). The height of the levee and floodwall would vary between 6 and 12 feet.

Upper Puyallup River (RM 17.4 – RM 28.6)

Jones Levee Improvement: The Jones Levee extends from approximately RM 21.0 to RM 22.5, along the right bank of the Upper Puyallup River (Map 11). The Preliminary TSP proposes to modify the levee in place by increasing the levee heights approximately 1.5 feet to 6.5 feet as well as improving the riverside erosion protection. This levee modification would also include a flow deflector design extending into the Ford Levee.

Area of Potential Effect (APE)

For the general investigation/feasibility study planning effort, the Corps is still involved in the feasibility level of design. Design and engineering is still conceptual and actual construction footprints are still being formulated and may change. Though a design change may alter the APE as described, the general parameters and buffers for any subsequent APE would remain for the proposed action.

In consultation with the Washington State Historic Preservation Officer, the Corps has determined the APE for purposes of Section 106 review. For direct effects, the Corps has established a buffered APE that would extend out 100 feet around the proposed construction footprint of new levees, raised levees, setback levees, and any other required construction action, including levee removal, road relocations, staging areas and fill areas as they are identified. For indirect effects resulting from flood inundation, the Corps has defined the APE to extend to the damage reach boundaries for flood inundation for a 1% ACE flood event (Maps 14 through 21). Within that area, the Corps would correlate existing cultural resources information and information gathered through consultation and compare the baseline without any action against the estimated future conditions under the Preliminary TSP to determine whether there are known or recorded resources in areas that might be threatened or affected. Specifically for visual, auditory or atmospheric intrusions, the APE extends to a ¼ mile buffer around new levees, setback levees, floodwalls, or levees that would be raised.

The APE as described considers both direct and indirect effects. The APE is based on current engineering design and construction plans and would be adjusted accordingly should the design or construction plans change. Roads may need to be shifted or relocated due to construction of new levees or expanded levee profiles where levees are raised or improved. However, no specific roads have been identified at this phase of the Study that would be shifted or relocated. Staging and access areas have not been established but would be included in the APE as that information becomes available. The Preliminary TSP has not identified a source for fill material. It is assumed that material from levees proposed for removal would be re-used in construction of the new levees or setback levees or that a commercial source of clean fill would be used. As engineering and design specifications are refined, the APE for direct and indirect effects would be revised as necessary to include all areas required for construction, access, staging, or fill material.

Within the Corps' planning process, feasibility studies emphasize making risk – informed decisions using existing information for planning decisions on overall project feasibility. Detailed studies may be phased as appropriate to pre-construction engineering and design after feasibility is completed. Archaeological surveys or other intensive field investigations normally would not be conducted without access/right-of-way agreements, which would not be pursued unless the project is authorized and funded. Given the parameters of the general investigation/feasibility study planning process, the Corps believes that the APE is sufficient to identify and consider both direct and indirect effects of the undertaking.

In addition to your Tribe, the Corps is identifying and notifying other consulting parties who might be interested in consulting on the Study and participating in the PA, including the SHPO, the Advisory Council on Historic Preservation, other Indian tribes, historic preservation commissions or representatives of certified local governments, and other government agencies and members of the public with a demonstrated interested in cultural, historical or social components of the Puyallup River Flood Risk Management General Investigation and Feasibility Study. We anticipate the PA would: outline a process to continue identification and evaluation of historic properties as the Preliminary TSP is refined and proposed actions are approved and funded; provide for assessment of effects on historic properties, and; address post-review discoveries of archaeological sites and inadvertent discoveries of human remains. The PA may also consider identifying best management practices or standard treatments of certain properties or effects, and the manner in which the Corps will conclude its Section 106 responsibilities for these individual actions.

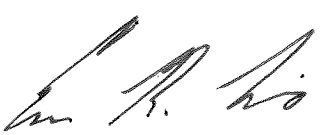
As noted at the outset, the purpose of this letter is to identify issues or concerns that the Tribe may have regarding cultural resources, and to seek information regarding

properties of religious or cultural significance that may be affected by actions proposed in the Preliminary TSP. We would appreciate hearing from you regarding any issues or properties of concern as soon as possible so that we may consider this information in our analysis. We are also inquiring whether the Tribe would like to participate in consultation on the PA being prepared to comply with Section 106 as provided at 36 C.F.R. § 800.4(b)(2) and 36 C.F.R. § 800.14(b), or if you do not have an interest or wish to consult on this Study. We request that you advise us regarding your interests in the Study and decision whether to participate in consultation on the PA by February 26, 2016.

Copies of this letter and accompanying enclosures are being provided to the following Tribal staff: Ms. Rhonda Foster, Tribal Historic Preservation Office, Cultural Resources Program.

For more information about the Puyallup general investigation/feasibility study, clarification about this request or any other concerns, please contact Mr. Rolla Queen (Senior Program Archaeologist) at (206) 316-3094 or Rolla.L.Queen@usace.army.mil, or Ms. Lynn Wetzler Dewald (Project Manager) at (206) 764-3695 or Lynn.W.Dewald@usace.army.mil. You may also request a Government-to-Government meeting with us at any time during the Study and we invite you, as a Federally-recognized Tribe, to participate in consultation with the Corps so that your concerns are identified and addressed prior to the Corps making a final decision on project measures. For assistance with general information regarding tribal coordination or to request a Government-to-Government meeting, please contact the Seattle District's Tribal Liaison, Ms. Lori Morris, at (206) 764-3625 or Frances.Morris@usace.army.mil. I can be reached by telephone at (206) 764-6922 or by email at Evan.R.Lewis@usace.army.mil.

Sincerely,



Evan R. Lewis, Chief
Environmental and Cultural Resources Branch

Enclosures

DEPARTMENT OF THE ARMY
SEATTLE DISTRICT, CORPS OF ENGINEERS
P.O. BOX 3755
SEATTLE, WASHINGTON 98124-3755

REPLY TO
ATTENTION OF

FEB 02 2016

Environmental and Cultural Resources Branch

The Honorable Carolyn Lubenau, Chairwoman
Snoqualmie Tribe
P.O. Box 969
Snoqualmie, WA 98065

Dear Chairwoman Lubenau,

The Seattle District, U. S. Army Corps of Engineers (Corps) is following up on our letter of January 19, 2016, regarding the Puyallup River Basin Flood Risk Management General Investigation (GI) Feasibility Study (Study). The purpose of this letter is to consult on the actions proposed in the Study and the process by which the Corps will manage review under Section 106 of the National Historic Preservation Act (NHPA). This letter provides the background and purpose of the Study, describes the specific actions proposed in the agency Preliminary Tentatively Selected Plan (TSP), and defines the area of potential effect (APE) within the context of the Corps' general investigation/feasibility study planning process. To assist in our review, we are consulting with you about the project, requesting your assistance in identifying any issues or concerns you might have, and specifically seeking information about properties which may be of religious or cultural significance that may be affected by actions proposed in the Study as specified by the implementing regulations for Section 106 of the National Historic Preservation Act at 36 C.F.R. § 800.4(a)(4). In addition, the Corps has concluded that a phased process is required to complete identification and evaluation of historic properties for the Study, including the partial deferment of identification and evaluation until the specific aspects or locations of the Preliminary TSP are more fully defined. As provided at 36 CFR § 800.4(b)(2), the Corps has determined that a Programmatic Agreement (PA) is the appropriate means to manage a phased review process for Section 106. We are inquiring whether the Tribe would like to participate in consultation on the PA as a consulting party. The PA would describe the phased process, including level of effort for inventory and evaluation, partial deferment of identification, evaluation, and assessment of effects to historic properties, and measures taken to avoid, minimize or mitigate effects to historic properties.

Study Background and Purpose

The Study is authorized under Section 209 of the *Flood Control Act (FCA) of 1962* (Public Law 87-874) and Study Resolution, Docket 2645, Committee on Transportation

and Infrastructure, U.S. House of Representatives, dated 21, June 2000[7]. The study area is comprised of the floodplains of the major populated tributaries within the Puyallup River Basin, which includes the Puyallup River, White River and Carbon River (Map 1). The study area is primarily located in Pierce County, Washington with the exception of a portion of the study area north of the main stem of the White River located in King County. The Puyallup River drains the northwest slope of Mt. Rainier and flows northwesterly for approximately 50 miles before discharging into Commencement Bay in the city of Tacoma, Washington. The White River drains the northeastern slope of Mt. Rainier and flows in a general northwest direction for about 50 miles before turning southward and entering the Puyallup River from the north at River Mile (RM) 10.3. The White River is the largest tributary to the Puyallup River. Mud Mountain Dam (MMD), a federally authorized flood control project, is located at RM 29.6 on the White River. The Carbon River originates on the north face of Mt. Rainier at the Carbon Glacier and enters the Puyallup River at RM 17.3.

The Puyallup River Basin includes the cities of Tacoma, Fife, Puyallup, Sumner, Auburn, and Orting, and drains a watershed of approximately 1,040 square miles. Existing development in the floodplain within the Puyallup River study area includes residential development, industrial and commercial development, critical infrastructure such as schools and water treatment plants, and major transportation infrastructure, including Interstate 5, railroad lines and the Port of Tacoma.

The study area includes twenty-eight levee segments currently in the U.S. Army Corps of Engineers National Levee Database (NLD). This includes twenty-six non-federal levees and two federally owned and operated levees. The river hydrology is also modified by MMD. MMD was authorized as Mud Mountain Reservoir by the *Flood Control Act of 22 June 1936, 74th Congress, 2nd Session.* The Flood Control Act of 1938 provided for operation and maintenance (O&M) of the project by the Corps and the *Flood Control Act of 1944* authorized construction and O&M of recreational facilities. In addition, the *Flood Control Act of June 28, 1938* provided for the construction and maintenance of a channel conveyance project on the Lower Puyallup River. Completed in 1950, the federally constructed and maintained levees were built from RM 0.7 to RM 2.8 on the Lower Puyallup River and were authorized as a companion project to MMD.

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[7] The study resolution states "... *That the Secretary of the Army is requested to review the report of the Chief of Engineers on the Upper Puyallup River, Washington, dated 1936, as referenced in the Flood Control Act of 1936 (P.L. 74-738), the Puget Sound and Adjacent Waters Study, authorized by Section 209 of the Rivers and Harbors Act of 1962 (P.L. 87-874) and other pertinent reports to determine whether modifications to the recommendations contained therein are advisable, with references toward providing improvements in the interest of water resource and watershed issues affecting Lake Tapps and the White River Watershed downstream of Mud Mountain Dam, Washington."* The referenced 1936 report included the entire Puyallup watershed, including the Puyallup River and tributaries such as the White River and Carbon River.

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Federal Authorized Levees (Left and Right Bank): The Federal Authorized Levees (FAL) extend from RM 0.7 to RM 2.7 on the right bank and RM 0.7 to RM 2.9 on the left bank. The Preliminary TSP proposes to raise sections of the left and right banks of the FAL along the Lower Puyallup River (Map 7). The authorized capacity of the Federal Levees is 50,000 cfs, which was intended to provide protection to the 1% annual chance of exceedance (ACE) flood event[8]. The proposed modifications to the Federal Levees include: the right bank levee would be raised from RM 2.0 to 2.7, and the FAL left bank levee would be raised from RM 1.5 to 2.9.

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New Levees - Pacific Park Levee / Butte Avenue Levee / Lower White River Levee: The Preliminary TSP proposes new levees along the right bank of the White River to manage flood risks to residential, commercial, and industrial properties. The new levees would extend from ~RM 2.0 to RM 4.5 and ~RM 5.0 to 6.0 at Pacific Park (Maps 12 and 13).

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HWY 410 Floodwall and Levee: The Preliminary TSP proposes adding a combination of a new levee and floodwall that would provide protection to the adjacent SR 410 and residential properties. The levee section is proposed between ~RM 10.5 and 11.0 and the floodwall would be located between RM 11.0 to 12.0 (Map 10). The height of the levee and floodwall would vary between 6 and 12 feet.

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Jones Levee Improvement: The Jones Levee extends from approximately RM 21.0 to RM 22.5, along the right bank of the Upper Puyallup River (Map 11). The Preliminary TSP proposes to modify the levee in place by increasing the levee heights approximately 1.5 feet to 6.5 feet as well as improving the riverside erosion protection. This levee modification would also include a flow deflector design extending into the Ford Levee.

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The APE as described considers both direct and indirect effects. The APE is based on current engineering design and construction plans and would be adjusted accordingly should the design or construction plans change. Roads may need to be shifted or relocated due to construction of new levees or expanded levee profiles where levees are raised or improved. However, no specific roads have been identified at this phase of the Study that would be shifted or relocated. Staging and access areas have not been established but would be included in the APE as that information becomes available. The Preliminary TSP has not identified a source for fill material. It is assumed that material from levees proposed for removal would be re-used in construction of the new levees or setback levees or that a commercial source of clean fill would be used. As engineering and design specifications are refined, the APE for direct and indirect effects would be revised as necessary to include all areas required for construction, access, staging, or fill material.

Within the Corps' planning process, feasibility studies emphasize making risk – informed decisions using existing information for planning decisions on overall project feasibility. Detailed studies may be phased as appropriate to pre-construction engineering and design after feasibility is completed. Archaeological surveys or other intensive field investigations normally would not be conducted without access/right-of-way agreements, which would not be pursued unless the project is authorized and funded. Given the parameters of the general investigation/feasibility study planning process, the Corps believes that the APE is sufficient to identify and consider both direct and indirect effects of the undertaking.

In addition to your Tribe, the Corps is identifying and notifying other consulting parties who might be interested in consulting on the Study and participating in the PA, including the SHPO, the Advisory Council on Historic Preservation, other Indian tribes, historic preservation commissions or representatives of certified local governments, and other government agencies and members of the public with a demonstrated interested in cultural, historical or social components of the Puyallup River Flood Risk Management General Investigation and Feasibility Study. We anticipate the PA would: outline a process to continue identification and evaluation of historic properties as the Preliminary TSP is refined and proposed actions are approved and funded; provide for assessment of effects on historic properties, and; address post-review discoveries of archaeological sites and inadvertent discoveries of human remains. The PA may also consider identifying best management practices or standard treatments of certain properties or effects, and the manner in which the Corps will conclude its Section 106 responsibilities for these individual actions.

As noted at the outset, the purpose of this letter is to identify issues or concerns that the Tribe may have regarding cultural resources, and to seek information regarding

properties of religious or cultural significance that may be affected by actions proposed in the Preliminary TSP. We would appreciate hearing from you regarding any issues or properties of concern as soon as possible so that we may consider this information in our analysis. We are also inquiring whether the Tribe would like to participate in consultation on the PA being prepared to comply with Section 106 as provided at 36 C.F.R. § 800.4(b)(2) and 36 C.F.R. § 800.14(b), or if you do not have an interest or wish to consult on this Study. We request that you advise us regarding your interests in the Study and decision whether to participate in consultation on the PA by February 26, 2016.

Copies of this letter and accompanying enclosures are being provided to the following Tribal staff: Mr. Steven Mullen-Moses, Cultural Resources Program.

For more information about the Puyallup general investigation/feasibility study, clarification about this request or any other concerns, please contact Mr. Rolla Queen (Senior Program Archaeologist) at (206) 316-3094 or Rolla.L.Queen@usace.army.mil, or Ms. Lynn Wetzler Dewald (Project Manager) at (206) 764-3695 or Lynn.W.Dewald@usace.army.mil. You may also request a Government-to-Government meeting with us at any time during the Study and we invite you, as a Federally-recognized Tribe, to participate in consultation with the Corps so that your concerns are identified and addressed prior to the Corps making a final decision on project measures. For assistance with general information regarding tribal coordination or to request a Government-to-Government meeting, please contact the Seattle District's Tribal Liaison, Ms. Lori Morris, at (206) 764-3625 or Frances.Morris@usace.army.mil. I can be reached by telephone at (206) 764-6922 or by email at Evan.R.Lewis@usace.army.mil.

Sincerely,

Evan R. Lewis, Chief
Environmental and Cultural Resources Branch

Enclosures

DEPARTMENT OF THE ARMY
SEATTLE DISTRICT, CORPS OF ENGINEERS
P.O. BOX 3755
SEATTLE, WASHINGTON 98124-3755

REPLY TO
ATTENTION OF

FEB 02 2016

Environmental and Cultural Resources Branch

The Honorable Bill Sterud, Chairman
Puyallup Tribe of the Puyallup Reservation
3009 East Portland Ave
Tacoma, WA 98404

Dear Chairman Sterud,

The Seattle District, U. S. Army Corps of Engineers (Corps) is following up on our letter of January 19, 2016, regarding the Puyallup River Basin Flood Risk Management General Investigation (GI) Feasibility Study (Study). The purpose of this letter is to consult on the actions proposed in the Study and the process by which the Corps will manage review under Section 106 of the National Historic Preservation Act (NHPA). This letter provides the background and purpose of the Study, describes the specific actions proposed in the agency Preliminary Tentatively Selected Plan (TSP), and defines the area of potential effect (APE) within the context of the Corps' general investigation/feasibility study planning process. To assist in our review, we are consulting with you about the project, requesting your assistance in identifying any issues or concerns you might have, and specifically seeking information about properties which may be of religious or cultural significance that may be affected by actions proposed in the Study as specified by the implementing regulations for Section 106 of the National Historic Preservation Act at 36 C.F.R. § 800.4(a)(4). In addition, the Corps has concluded that a phased process is required to complete identification and evaluation of historic properties for the Study, including the partial deferment of identification and evaluation until the specific aspects or locations of the Preliminary TSP are more fully defined. As provided at 36 CFR § 800.4(b)(2), the Corps has determined that a Programmatic Agreement (PA) is the appropriate means to manage a phased review process for Section 106. We are inquiring whether the Tribe would like to participate in consultation on the PA as a consulting party. The PA would describe the phased process, including level of effort for inventory and evaluation, partial deferment of identification, evaluation, and assessment of effects to historic properties, and measures taken to avoid, minimize or mitigate effects to historic properties.

Study Background and Purpose

The Study is authorized under Section 209 of the *Flood Control Act (FCA) of 1962* (Public Law 87-874) and Study Resolution, Docket 2645, Committee on Transportation

and Infrastructure, U.S. House of Representatives, dated 21, June 2000[5]. The study area is comprised of the floodplains of the major populated tributaries within the Puyallup River Basin, which includes the Puyallup River, White River and Carbon River (Map 1). The study area is primarily located in Pierce County, Washington with the exception of a portion of the study area north of the main stem of the White River located in King County. The Puyallup River drains the northwest slope of Mt. Rainier and flows northwesterly for approximately 50 miles before discharging into Commencement Bay in the city of Tacoma, Washington. The White River drains the northeastern slope of Mt. Rainier and flows in a general northwest direction for about 50 miles before turning southward and entering the Puyallup River from the north at River Mile (RM) 10.3. The White River is the largest tributary to the Puyallup River. Mud Mountain Dam (MMD), a federally authorized flood control project, is located at RM 29.6 on the White River. The Carbon River originates on the north face of Mt. Rainier at the Carbon Glacier and enters the Puyallup River at RM 17.3.

The Puyallup River Basin includes the cities of Tacoma, Fife, Puyallup, Sumner, Auburn, and Orting, and drains a watershed of approximately 1,040 square miles. Existing development in the floodplain within the Puyallup River study area includes residential development, industrial and commercial development, critical infrastructure such as schools and water treatment plants, and major transportation infrastructure, including Interstate 5, railroad lines and the Port of Tacoma.

The study area includes twenty-eight levee segments currently in the U.S. Army Corps of Engineers National Levee Database (NLD). This includes twenty-six non-federal levees and two federally owned and operated levees. The river hydrology is also modified by MMD. MMD was authorized as Mud Mountain Reservoir by the *Flood Control Act of 22 June 1936, 74th Congress, 2nd Session.* The Flood Control Act of 1938 provided for operation and maintenance (O&M) of the project by the Corps and the *Flood Control Act of 1944* authorized construction and O&M of recreational facilities. In addition, the *Flood Control Act of June 28, 1938* provided for the construction and maintenance of a channel conveyance project on the Lower Puyallup River. Completed in 1950, the federally constructed and maintained levees were built from RM 0.7 to RM 2.8 on the Lower Puyallup River and were authorized as a companion project to MMD.

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[5] The study resolution states "... *That the Secretary of the Army is requested to review the report of the Chief of Engineers on the Upper Puyallup River, Washington, dated 1936, as referenced in the Flood Control Act of 1936 (P.L. 74-738), the Puget Sound and Adjacent Waters Study, authorized by Section 209 of the Rivers and Harbors Act of 1962 (P.L. 87-874) and other pertinent reports to determine whether modifications to the recommendations contained therein are advisable, with references toward providing improvements in the interest of water resource and watershed issues affecting Lake Tapps and the White River Watershed downstream of Mud Mountain Dam, Washington."* The referenced 1936 report included the entire Puyallup watershed, including the Puyallup River and tributaries such as the White River and Carbon River.

The levees are 2.1 miles in length on the left and right banks and allow for an in-channel conveyance capacity of 50,000 cubic feet per second (cfs).

Major flood events since the construction of MMD have occurred in the Puyallup Basin in 1990, 1996, 2006, and 2009. Although other floods have produced higher peak flows at different points throughout the basin, the flood of February 1996 was the worst basin-wide (as well as regional) flood event seen in recent times. The peak flow at Puyallup, WA was approximately 47,000 cfs. Total costs in damages to Pierce County and surrounding local jurisdictions for this event were estimated to be over $40 million. The flood of record (based on peak flow) in the lower Puyallup occurred in December of 1933, prior to the construction of MMD. This event produced a peak flow (as recorded by U.S. Geological Survey gage 12101500) of 57,000 cfs at Puyallup WA. This value could have been even higher as this event exceeded the channel capacity resulting in water in the floodplain that could not be measured by the stream gage. The 1933 flood event was a catalyst for the planning, authorization and construction of MMD.

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Agency Preliminary Tentatively Selected Plan (TSP): Proposed Flood Risk Management Actions

The Corps is completing the initial steps of the planning process, which will be documented in a Draft Integrated Feasibility Report and Environmental Impact Statement (FR/EIS). Actual footprints are still being formulated and may be adjusted as the study progresses through the feasibility-level design analysis that will be documented in a Final Integrated FR/EIS before completion of the feasibility study. The feasibility-level design analysis will be informed by comments received during concurrent public, technical, legal, and policy reviews of the Draft Integrated FR/EIS. The Study is currently in the Comparison of Alternative Plans Phase of the Planning Process. The Corps has identified a Preliminary TSP and is in the process of identifying a Tentatively Selected Plan (TSP) (Map 1A). Two alternatives were identified in the Study in addition to a No Action alternative. The Preliminary TSP is referred to as the Levee Modifications Alternative, which is the alternative described further in this letter for purposes of defining the APE for Section 106. The other alternative (Levee

Modifications with Sediment Management Alternative) is not preferred due to its increased impacts to significant resources, mitigation needs, operation and maintenance costs, and the fact that it does not reduce flood risks as well as the Preliminary TSP over the planning timeframe. The No Action Alternative is not preferred because it does not reduce flood risks, but rather, flood risks would increase throughout the planning timeframe.

The intent of the actions proposed in the Preliminary TSP is to modify the existing levee system to manage flood risk by setting back levees, increasing existing levee heights, improving existing levee reliability, or constructing new levees. The proposed levee modifications are the primary flood risk management features and would work with other existing flood risk management features to reduce flood risk within the study area. Actual levee alignments, footprints, or alternative measures will be better refined and sited during subsequent phases of the feasibility study and during pre-construction and engineering design process.

The specific actions currently in the preliminary TSP are described below for each reach of the Puyallup River. Due to the configuration of the Puyallup River, the river is described for purposes of the study as the Lower Puyallup River (approximately RM 0.0 – RM 10.3), Middle Puyallup River (approximately RM 10.3 – RM 17.4) and Upper Puyallup River RM (approximately 17.4 – RM 29.6). A general overview is provided in Map 1A and Maps 2 through 6.

Lower Puyallup River (RM 0.0 – RM 10.3)

Federal Authorized Levees (Left and Right Bank): The Federal Authorized Levees (FAL) extend from RM 0.7 to RM 2.7 on the right bank and RM 0.7 to RM 2.9 on the left bank. The Preliminary TSP proposes to raise sections of the left and right banks of the FAL along the Lower Puyallup River (Map 7). The authorized capacity of the Federal Levees is 50,000 cfs, which was intended to provide protection to the 1% annual chance of exceedance (ACE) flood event[6]. The proposed modifications to the Federal Levees include: the right bank levee would be raised from RM 2.0 to 2.7, and the FAL left bank levee would be raised from RM 1.5 to 2.9.

[6] In Corps reports dealing with flood risk management, the risk of an individual storm or flood event occurring is expressed as the annual chance of exceedance (ACE), which is the probability that the specified discharge, or flood event, could be equaled or exceeded during any given year. A "1% ACE flood" has in the past commonly been referred to as a "100-yr flood". The occurrence of a specific ACE flood in one year, does not alter its ACE in the next year. Many documents, along with maps and other supporting materials, use "x-year flood" expressions, in which the number of years is sometimes known as "the return interval." (See Figure 1)

North Levee Road A- Setback: The Preliminary TSP proposes setting back the North Levee Road levee on the right bank of the Lower Puyallup River extending from ~RM 3.0 to the end of the North Levee Road at RM 8 (Maps 7, 8, and 9). In the Preliminary TSP, the levee would be setback from ~RM 3.0 to ~RM 4.0 (Frank Albert Road) approximately 1,000 feet, from ~RM 4.0 to RM 6.0 approximately 80 to 100 feet, from RM 6.0 to RM 7.1 approximately 600 feet, and from RM 7.0 to RM 8.0 approximately 80 to 100 feet. The setback levee alignment is approximately 32,000 linear feet with approximate levee heights ranging from 6 to15 feet. The proposed levee modification would manage flood risks to residential, commercial and industrial properties. The existing levee would be removed and the material re-used in the setback levee.

River Road Levee Floodwall: The Preliminary TSP considers adding a flood wall along the River Road Levee on the left bank of the Lower Puyallup River extending from approximately RM 3.0 to RM 7.0 (Map 9). This floodwall would reduce risks to the transportation corridor and residential, commercial and industrial structures. The floodwall height would range from 4 to 8 feet, with the average of about 6 feet.

Lower Puyallup River Extension Levee (OR Floodwall): The Preliminary TSP considers extending the levee on the left bank of the Lower Puyallup River from RM 7.2 to RM 8.6 (Map 9). The new extension levee would be approximately 7,200 feet long and would incorporate about 1,100 feet of the existing River Road Levee. The levee height would vary between 8 and 13 feet. In areas where the levee is currently approximately 8 feet tall, there would be about 3.5 feet of additional fill placed on the existing levee.

White River (Puyallup River RM 10.3 / White River RM 0.0 to RM 29.6)

New Levees - Pacific Park Levee / Butte Avenue Levee / Lower White River Levee: The Preliminary TSP proposes new levees along the right bank of the White River to manage flood risks to residential, commercial, and industrial properties. The new levees would extend from ~RM 2.0 to RM 4.5 and ~RM 5.0 to 6.0 at Pacific Park (Maps 12 and 13).

Property Acquisition: The Preliminary TSP proposes that the non-Federal sponsor will acquire 35 acres of property RM 4.5 to RM 5.0 along the left bank of the White River. These properties have experienced repetitive flood impacts and are at risk to additional adverse flood impacts.

Middle Puyallup River (RM 10.3 – RM 17.4)

HWY 410 Floodwall and Levee: The Preliminary TSP proposes adding a combination of a new levee and floodwall that would provide protection to the adjacent SR 410 and residential properties. The levee section is proposed between ~RM 10.5 and 11.0 and the floodwall would be located between RM 11.0 to 12.0 (Map 10). The height of the levee and floodwall would vary between 6 and 12 feet.

Upper Puyallup River (RM 17.4 – RM 28.6)

Jones Levee Improvement: The Jones Levee extends from approximately RM 21.0 to RM 22.5, along the right bank of the Upper Puyallup River (Map 11). The Preliminary TSP proposes to modify the levee in place by increasing the levee heights approximately 1.5 feet to 6.5 feet as well as improving the riverside erosion protection. This levee modification would also include a flow deflector design extending into the Ford Levee.

Area of Potential Effect (APE)

For the general investigation/feasibility study planning effort, the Corps is still involved in the feasibility level of design. Design and engineering is still conceptual and actual construction footprints are still being formulated and may change. Though a design change may alter the APE as described, the general parameters and buffers for any subsequent APE would remain for the proposed action.

In consultation with the Washington State Historic Preservation Officer, the Corps has determined the APE for purposes of Section 106 review. For direct effects, the Corps has established a buffered APE that would extend out 100 feet around the proposed construction footprint of new levees, raised levees, setback levees, and any other required construction action, including levee removal, road relocations, staging areas and fill areas as they are identified. For indirect effects resulting from flood inundation, the Corps has defined the APE to extend to the damage reach boundaries for flood inundation for a 1% ACE flood event (Maps 14 through 21). Within that area, the Corps would correlate existing cultural resources information and information gathered through consultation and compare the baseline without any action against the estimated future conditions under the Preliminary TSP to determine whether there are known or recorded resources in areas that might be threatened or affected. Specifically for visual, auditory or atmospheric intrusions, the APE extends to a ¼ mile buffer around new levees, setback levees, floodwalls, or levees that would be raised.

The APE as described considers both direct and indirect effects. The APE is based on current engineering design and construction plans and would be adjusted accordingly should the design or construction plans change. Roads may need to be shifted or relocated due to construction of new levees or expanded levee profiles where levees are raised or improved. However, no specific roads have been identified at this phase of the Study that would be shifted or relocated. Staging and access areas have not been established but would be included in the APE as that information becomes available. The Preliminary TSP has not identified a source for fill material. It is assumed that material from levees proposed for removal would be re-used in construction of the new levees or setback levees or that a commercial source of clean fill would be used. As engineering and design specifications are refined, the APE for direct and indirect effects would be revised as necessary to include all areas required for construction, access, staging, or fill material.

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Copies of this letter and accompanying enclosures are being provided to the following Tribal staff: Mr. Brandon Reynon, Cultural Resources Program, Historic Preservation Department, and; Mr. Jeffrey Thomas, Director, Timber, Fish and Wildlife Programs.

For more information about the Puyallup general investigation/feasibility study, clarification about this request or any other concerns, please contact Mr. Rolla Queen (Senior Program Archaeologist) at (206) 316-3094 or Rolla.L.Queen@usace.army.mil, or Ms. Lynn Wetzler Dewald (Project Manager) at (206) 764-3695 or Lynn.W.Dewald@usace.army.mil. You may also request a Government-to-Government meeting with us at any time during the Study and we invite you, as a Federally-recognized Tribe, to participate in consultation with the Corps so that your concerns are identified and addressed prior to the Corps making a final decision on project measures. For assistance with general information regarding tribal coordination or to request a Government-to-Government meeting, please contact the Seattle District's Tribal Liaison, Ms. Lori Morris, at (206) 764-3625 or Frances.Morris@usace.army.mil. I can be reached by telephone at (206) 764-6922 or by email at Evan.R.Lewis@usace.army.mil.

Sincerely,

Evan R. Lewis, Chief
Environmental and Cultural Resources Branch

Enclosures

DEPARTMENT OF THE ARMY
SEATTLE DISTRICT, CORPS OF ENGINEERS
P.O. BOX 3755
SEATTLE, WASHINGTON 98124-3755

REPLY TO
ATTENTION OF

FEB 02 2016

Environmental and Cultural Resources Branch

The Honorable Farron McCloud, Chairman
Nisqually Indian Tribe of the Nisqually Reservation
4820 She-Na-Num Dr. SE
Olympia, WA 98513-9105

Dear Chairman McCloud,

The Seattle District, U. S. Army Corps of Engineers (Corps) is following up on our letter of January 19, 2016, regarding the Puyallup River Basin Flood Risk Management General Investigation (GI) Feasibility Study (Study). The purpose of this letter is to consult on the actions proposed in the Study and the process by which the Corps will manage review under Section 106 of the National Historic Preservation Act (NHPA). This letter provides the background and purpose of the Study, describes the specific actions proposed in the agency Preliminary Tentatively Selected Plan (TSP), and defines the area of potential effect (APE) within the context of the Corps' general investigation/feasibility study planning process. To assist in our review, we are consulting with you about the project, requesting your assistance in identifying any issues or concerns you might have, and specifically seeking information about properties which may be of religious or cultural significance that may be affected by actions proposed in the Study as specified by the implementing regulations for Section 106 of the National Historic Preservation Act at 36 C.F.R. § 800.4(a)(4). In addition, the Corps has concluded that a phased process is required to complete identification and evaluation of historic properties for the Study, including the partial deferment of identification and evaluation until the specific aspects or locations of the Preliminary TSP are more fully defined. As provided at 36 CFR § 800.4(b)(2), the Corps has determined that a Programmatic Agreement (PA) is the appropriate means to manage a phased review process for Section 106. We are inquiring whether the Tribe would like to participate in consultation on the PA as a consulting party. The PA would describe the phased process, including level of effort for inventory and evaluation, partial deferment of identification, evaluation, and assessment of effects to historic properties, and measures taken to avoid, minimize or mitigate effects to historic properties.

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and Infrastructure, U.S. House of Representatives, dated 21, June 2000[3]. The study area is comprised of the floodplains of the major populated tributaries within the Puyallup River Basin, which includes the Puyallup River, White River and Carbon River (Map 1). The study area is primarily located in Pierce County, Washington with the exception of a portion of the study area north of the main stem of the White River located in King County. The Puyallup River drains the northwest slope of Mt. Rainier and flows northwesterly for approximately 50 miles before discharging into Commencement Bay in the city of Tacoma, Washington. The White River drains the northeastern slope of Mt. Rainier and flows in a general northwest direction for about 50 miles before turning southward and entering the Puyallup River from the north at River Mile (RM) 10.3. The White River is the largest tributary to the Puyallup River. Mud Mountain Dam (MMD), a federally authorized flood control project, is located at RM 29.6 on the White River. The Carbon River originates on the north face of Mt. Rainier at the Carbon Glacier and enters the Puyallup River at RM 17.3.

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Lower Puyallup River (RM 0.0 – RM 10.3)

Federal Authorized Levees (Left and Right Bank): The Federal Authorized Levees (FAL) extend from RM 0.7 to RM 2.7 on the right bank and RM 0.7 to RM 2.9 on the left bank. The Preliminary TSP proposes to raise sections of the left and right banks of the FAL along the Lower Puyallup River (Map 7). The authorized capacity of the Federal Levees is 50,000 cfs, which was intended to provide protection to the 1% annual chance of exceedance (ACE) flood event[4]. The proposed modifications to the Federal Levees include: the right bank levee would be raised from RM 2.0 to 2.7, and the FAL left bank levee would be raised from RM 1.5 to 2.9.

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Area of Potential Effect (APE)

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In addition to your Tribe, the Corps is identifying and notifying other consulting parties who might be interested in consulting on the Study and participating in the PA, including the SHPO, the Advisory Council on Historic Preservation, other Indian tribes, historic preservation commissions or representatives of certified local governments, and other government agencies and members of the public with a demonstrated interested in cultural, historical or social components of the Puyallup River Flood Risk Management General Investigation and Feasibility Study. We anticipate the PA would: outline a process to continue identification and evaluation of historic properties as the Preliminary TSP is refined and proposed actions are approved and funded; provide for assessment of effects on historic properties, and; address post-review discoveries of archaeological sites and inadvertent discoveries of human remains. The PA may also consider identifying best management practices or standard treatments of certain properties or effects, and the manner in which the Corps will conclude its Section 106 responsibilities for these individual actions.

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properties of religious or cultural significance that may be affected by actions proposed in the Preliminary TSP. We would appreciate hearing from you regarding any issues or properties of concern as soon as possible so that we may consider this information in our analysis. We are also inquiring whether the Tribe would like to participate in consultation on the PA being prepared to comply with Section 106 as provided at 36 C.F.R. § 800.4(b)(2) and 36 C.F.R. § 800.14(b), or if you do not have an interest or wish to consult on this Study. We request that you advise us regarding your interests in the Study and decision whether to participate in consultation on the PA by February 26, 2016.

Copies of this letter and accompanying enclosures are being provided to the following Tribal staff: Ms. Jackie Wall, Tribal Historic Preservation Office, Cultural Resources Department.

For more information about the Puyallup general investigation/feasibility study, clarification about this request or any other concerns, please contact Mr. Rolla Queen (Senior Program Archaeologist) at (206) 316-3094 or Rolla.L.Queen@usace.army.mil, or Ms. Lynn Wetzler Dewald (Project Manager) at (206) 764-3695 or Lynn.W.Dewald@usace.army.mil. You may also request a Government-to-Government meeting with us at any time during the Study and we invite you, as a Federally-recognized Tribe, to participate in consultation with the Corps so that your concerns are identified and addressed prior to the Corps making a final decision on project measures. For assistance with general information regarding tribal coordination or to request a Government-to-Government meeting, please contact the Seattle District's Tribal Liaison, Ms. Lori Morris, at (206) 764-3625 or Frances.Morris@usace.army.mil. I can be reached by telephone at (206) 764-6922 or by email at Evan.R.Lewis@usace.army.mil.

Sincerely,

Evan R. Lewis, Chief
Environmental and Cultural Resources Branch

Enclosures

DEPARTMENT OF THE ARMY
SEATTLE DISTRICT, CORPS OF ENGINEERS
P.O. BOX 3755
SEATTLE, WASHINGTON 98124-3755

REPLY TO
ATTENTION OF

Environmental and Cultural Resources Branch

The Honorable Virginia Cross, Chairwoman
Muckleshoot Indian Tribe of the Muckleshoot Reservation
39015 172nd Ave SE
Auburn, WA 98092

Dear Chairwoman Cross,

The Seattle District, U. S. Army Corps of Engineers (Corps) is following up on our letter of January 19, 2016, regarding the Puyallup River Basin Flood Risk Management General Investigation (GI) Feasibility Study (Study). The purpose of this letter is to consult on the actions proposed in the Study and the process by which the Corps will manage review under Section 106 of the National Historic Preservation Act (NHPA). This letter provides the background and purpose of the Study, describes the specific actions proposed in the agency Preliminary Tentatively Selected Plan (TSP), and defines the area of potential effect (APE) within the context of the Corps' general investigation/feasibility study planning process. To assist in our review, we are consulting with you about the project, requesting your assistance in identifying any issues or concerns you might have, and specifically seeking information about properties which may be of religious or cultural significance that may be affected by actions proposed in the Study as specified by the implementing regulations for Section 106 of the National Historic Preservation Act at 36 C.F.R. § 800.4(a)(4). In addition, the Corps has concluded that a phased process is required to complete identification and evaluation of historic properties for the Study, including the partial deferment of identification and evaluation until the specific aspects or locations of the Preliminary TSP are more fully defined. As provided at 36 CFR § 800.4(b)(2), the Corps has determined that a Programmatic Agreement (PA) is the appropriate means to manage a phased review process for Section 106. We are inquiring whether the Tribe would like to participate in consultation on the PA as a consulting party. The PA would describe the phased process, including level of effort for inventory and evaluation, partial deferment of identification, evaluation, and assessment of effects to historic properties, and measures taken to avoid, minimize or mitigate effects to historic properties.

Study Background and Purpose

The Study is authorized under Section 209 of the *Flood Control Act (FCA) of 1962* (Public Law 87-874) and Study Resolution, Docket 2645, Committee on Transportation

and Infrastructure, U.S. House of Representatives, dated 21, June 2000[1]. The study area is comprised of the floodplains of the major populated tributaries within the Puyallup River Basin, which includes the Puyallup River, White River and Carbon River (Map 1). The study area is primarily located in Pierce County, Washington with the exception of a portion of the study area north of the main stem of the White River located in King County. The Puyallup River drains the northwest slope of Mt. Rainier and flows northwesterly for approximately 50 miles before discharging into Commencement Bay in the city of Tacoma, Washington. The White River drains the northeastern slope of Mt. Rainier and flows in a general northwest direction for about 50 miles before turning southward and entering the Puyallup River from the north at River Mile (RM) 10.3. The White River is the largest tributary to the Puyallup River. Mud Mountain Dam (MMD), a federally authorized flood control project, is located at RM 29.6 on the White River. The Carbon River originates on the north face of Mt. Rainier at the Carbon Glacier and enters the Puyallup River at RM 17.3.

The Puyallup River Basin includes the cities of Tacoma, Fife, Puyallup, Sumner, Auburn, and Orting, and drains a watershed of approximately 1,040 square miles. Existing development in the floodplain within the Puyallup River study area includes residential development, industrial and commercial development, critical infrastructure such as schools and water treatment plants, and major transportation infrastructure, including Interstate 5, railroad lines and the Port of Tacoma.

The study area includes twenty-eight levee segments currently in the U.S. Army Corps of Engineers National Levee Database (NLD). This includes twenty-six non-federal levees and two federally owned and operated levees. The river hydrology is also modified by MMD. MMD was authorized as Mud Mountain Reservoir by the *Flood Control Act of 22 June 1936, 74th Congress, 2nd Session.* The Flood Control Act of 1938 provided for operation and maintenance (O&M) of the project by the Corps and the *Flood Control Act of 1944* authorized construction and O&M of recreational facilities. In addition, the *Flood Control Act of June 28, 1938* provided for the construction and maintenance of a channel conveyance project on the Lower Puyallup River. Completed in 1950, the federally constructed and maintained levees were built from RM 0.7 to RM 2.8 on the Lower Puyallup River and were authorized as a companion project to MMD.

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[1] The study resolution states "... *That the Secretary of the Army is requested to review the report of the Chief of Engineers on the Upper Puyallup River, Washington, dated 1936, as referenced in the Flood Control Act of 1936 (P.L. 74-738), the Puget Sound and Adjacent Waters Study, authorized by Section 209 of the Rivers and Harbors Act of 1962 (P.L. 87-874) and other pertinent reports to determine whether modifications to the recommendations contained therein are advisable, with references toward providing improvements in the interest of water resource and watershed issues affecting Lake Tapps and the White River Watershed downstream of Mud Mountain Dam, Washington.*" The referenced 1936 report included the entire Puyallup watershed, including the Puyallup River and tributaries such as the White River and Carbon River.

The levees are 2.1 miles in length on the left and right banks and allow for an in-channel conveyance capacity of 50,000 cubic feet per second (cfs).

Major flood events since the construction of MMD have occurred in the Puyallup Basin in 1990, 1996, 2006, and 2009. Although other floods have produced higher peak flows at different points throughout the basin, the flood of February 1996 was the worst basin-wide (as well as regional) flood event seen in recent times. The peak flow at Puyallup, WA was approximately 47,000 cfs. Total costs in damages to Pierce County and surrounding local jurisdictions for this event were estimated to be over $40 million. The flood of record (based on peak flow) in the lower Puyallup occurred in December of 1933, prior to the construction of MMD. This event produced a peak flow (as recorded by U.S. Geological Survey gage 12101500) of 57,000 cfs at Puyallup WA. This value could have been even higher as this event exceeded the channel capacity resulting in water in the floodplain that could not be measured by the stream gage. The 1933 flood event was a catalyst for the planning, authorization and construction of MMD.

The Puyallup Basin contains a patchwork of locally constructed and maintained levee systems on each of the tributaries. Most of the local levees were constructed during a period between the 1910's and the 1930's and many have been repaired, realigned, or otherwise modified in the ensuing decades. Due to the age and condition of the infrastructure, reliability of flood risk management works is of critical concern to the Study sponsor, Pierce County. Major flood events in 1996, 2006, and 2009 resulted in overtopping, scour, and breaching of levees throughout the basin prompting significant repair costs and maintenance activities at a local level.

Agency Preliminary Tentatively Selected Plan (TSP): Proposed Flood Risk Management Actions

The Corps is completing the initial steps of the planning process, which will be documented in a Draft Integrated Feasibility Report and Environmental Impact Statement (FR/EIS). Actual footprints are still being formulated and may be adjusted as the study progresses through the feasibility-level design analysis that will be documented in a Final Integrated FR/EIS before completion of the feasibility study. The feasibility-level design analysis will be informed by comments received during concurrent public, technical, legal, and policy reviews of the Draft Integrated FR/EIS. The Study is currently in the Comparison of Alternative Plans Phase of the Planning Process. The Corps has identified a Preliminary TSP and is in the process of identifying a Tentatively Selected Plan (TSP) (Map 1A). Two alternatives were identified in the Study in addition to a No Action alternative. The Preliminary TSP is referred to as the Levee Modifications Alternative, which is the alternative described further in this letter for purposes of defining the APE for Section 106. The other alternative (Levee

Modifications with Sediment Management Alternative) is not preferred due to its increased impacts to significant resources, mitigation needs, operation and maintenance costs, and the fact that it does not reduce flood risks as well as the Preliminary TSP over the planning timeframe. The No Action Alternative is not preferred because it does not reduce flood risks, but rather, flood risks would increase throughout the planning timeframe.

The intent of the actions proposed in the Preliminary TSP is to modify the existing levee system to manage flood risk by setting back levees, increasing existing levee heights, improving existing levee reliability, or constructing new levees. The proposed levee modifications are the primary flood risk management features and would work with other existing flood risk management features to reduce flood risk within the study area. Actual levee alignments, footprints, or alternative measures will be better refined and sited during subsequent phases of the feasibility study and during pre-construction and engineering design process.

The specific actions currently in the preliminary TSP are described below for each reach of the Puyallup River. Due to the configuration of the Puyallup River, the river is described for purposes of the study as the Lower Puyallup River (approximately RM 0.0 – RM 10.3), Middle Puyallup River (approximately RM 10.3 – RM 17.4) and Upper Puyallup River RM (approximately 17.4 – RM 29.6). A general overview is provided in Map 1A and Maps 2 through 6.

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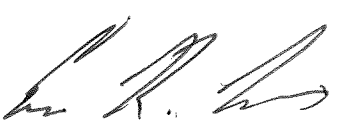
Sincerely,



Evan R. Lewis, Chief
Environmental and Cultural Resources Branch

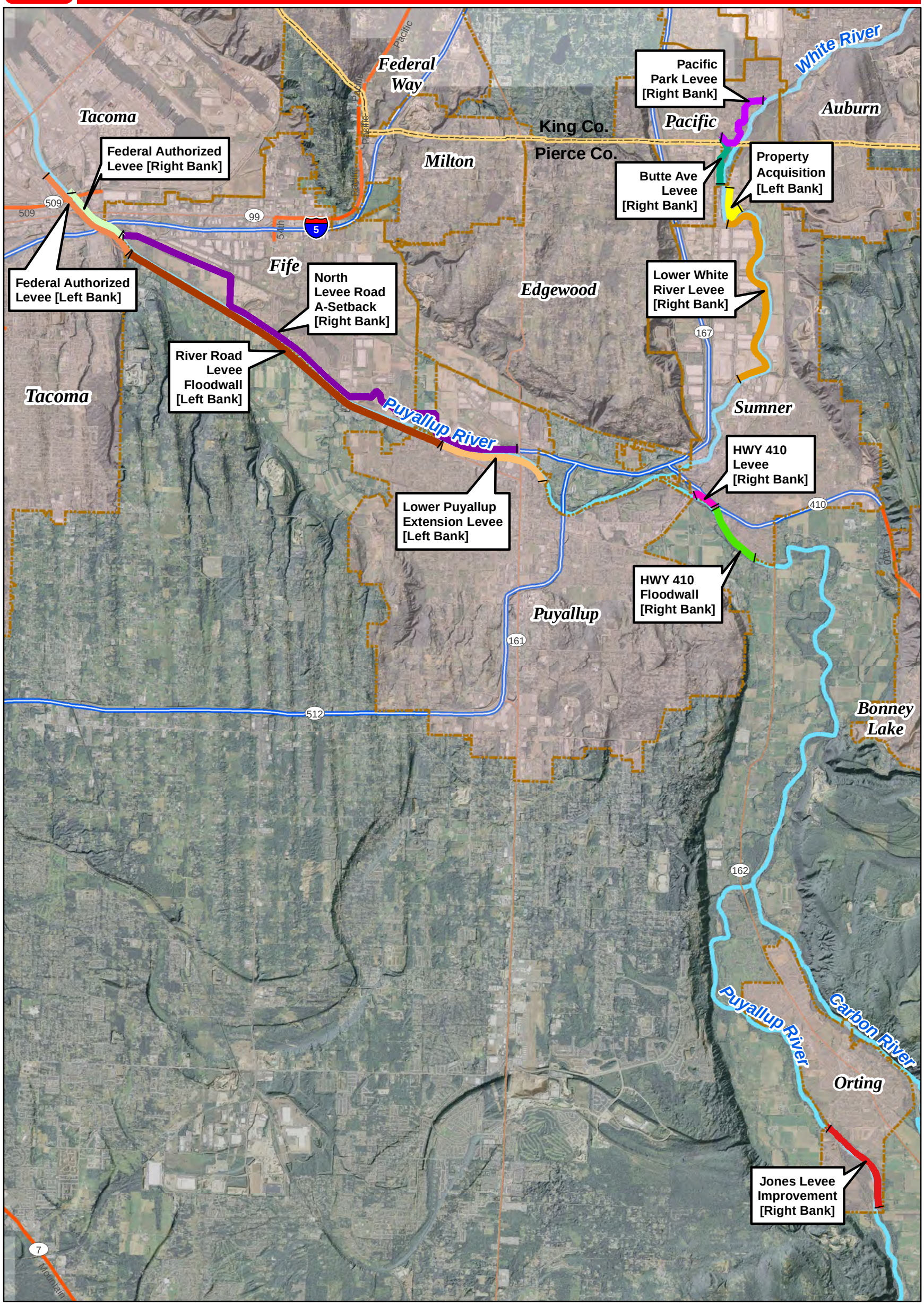
Enclosures

Figure 1: Annual Chance of Exceedance (ACE) Conversion from Return-Interval in Years

Annual Chance of Exceedance (ACE) in %	Average Return Interval in Years
50	2
10	10
5	20
4	25
2	50
1	100
0.4	250
0.2	500

MAP 1A

Puyallup River Basin Flood Risk Management - Tentatively Selected Plan



TSP Features

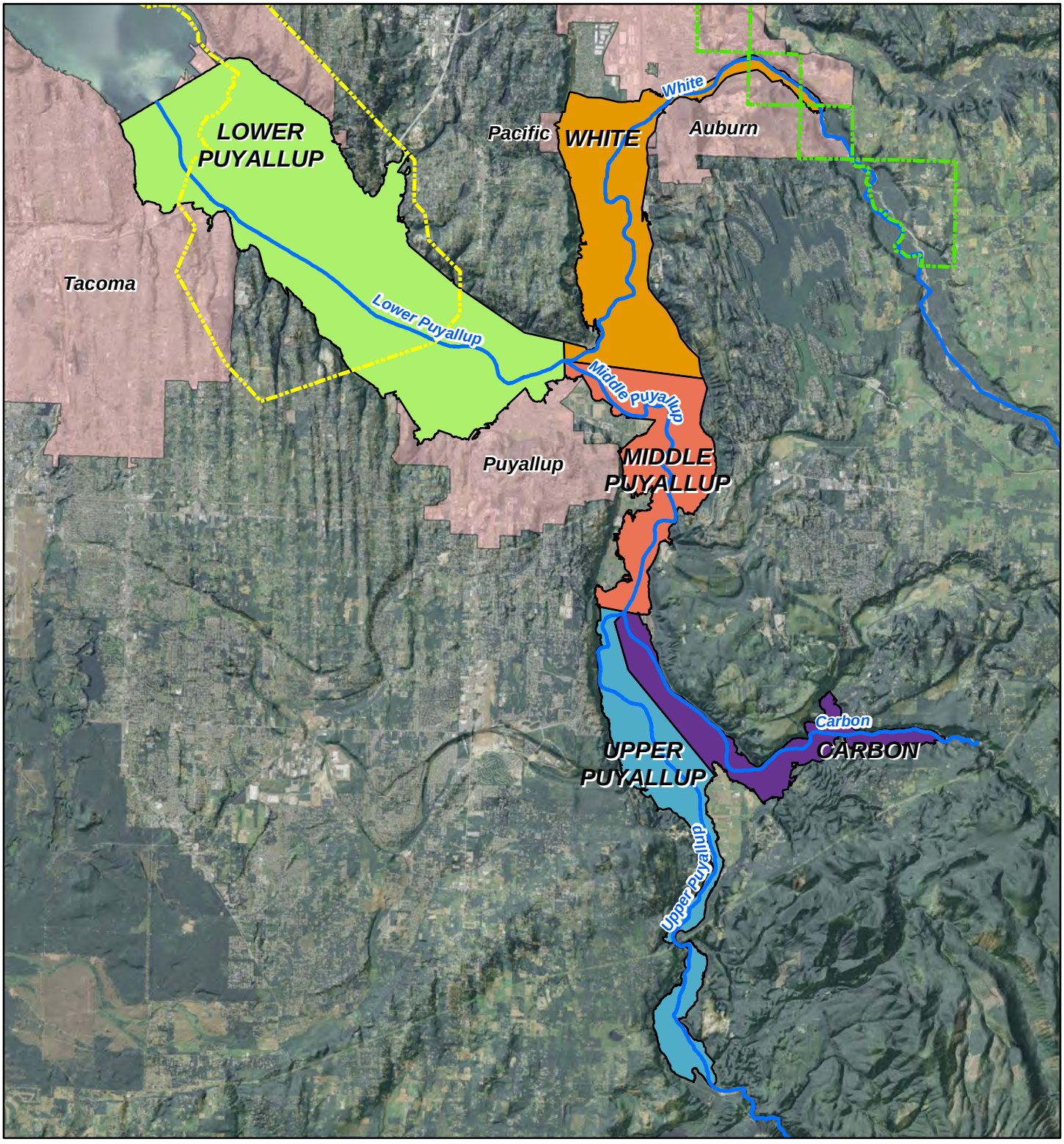
- Butte Ave Levee
- Federal Authorized Levee - Left Bank
- Federal Authorized Levee - Right Bank
- HWY 410 Floodwall
- HWY 410 Levee
- Jones Levee Improvement
- Lower Puyallup Extension Levee
- Lower White River Levee
- North Levee Road A-Setback
- Pacific Park Levee
- Property Acquisition
- River Road Levee Floodwall

0 0.25 0.5 1 Miles

N W E S

MAP 1

Puyallup River Basin General Investigation - River Reaches



River Reaches

- CARBON
- LOWER PUYALLUP
- MIDDLE PUYALLUP
- UPPER PUYALLUP
- WHITE

- Rivers
- Muckleshoot Tribe
- Puyallup Tribe
- Cities

0 0.5 1 2 Miles

N W E S

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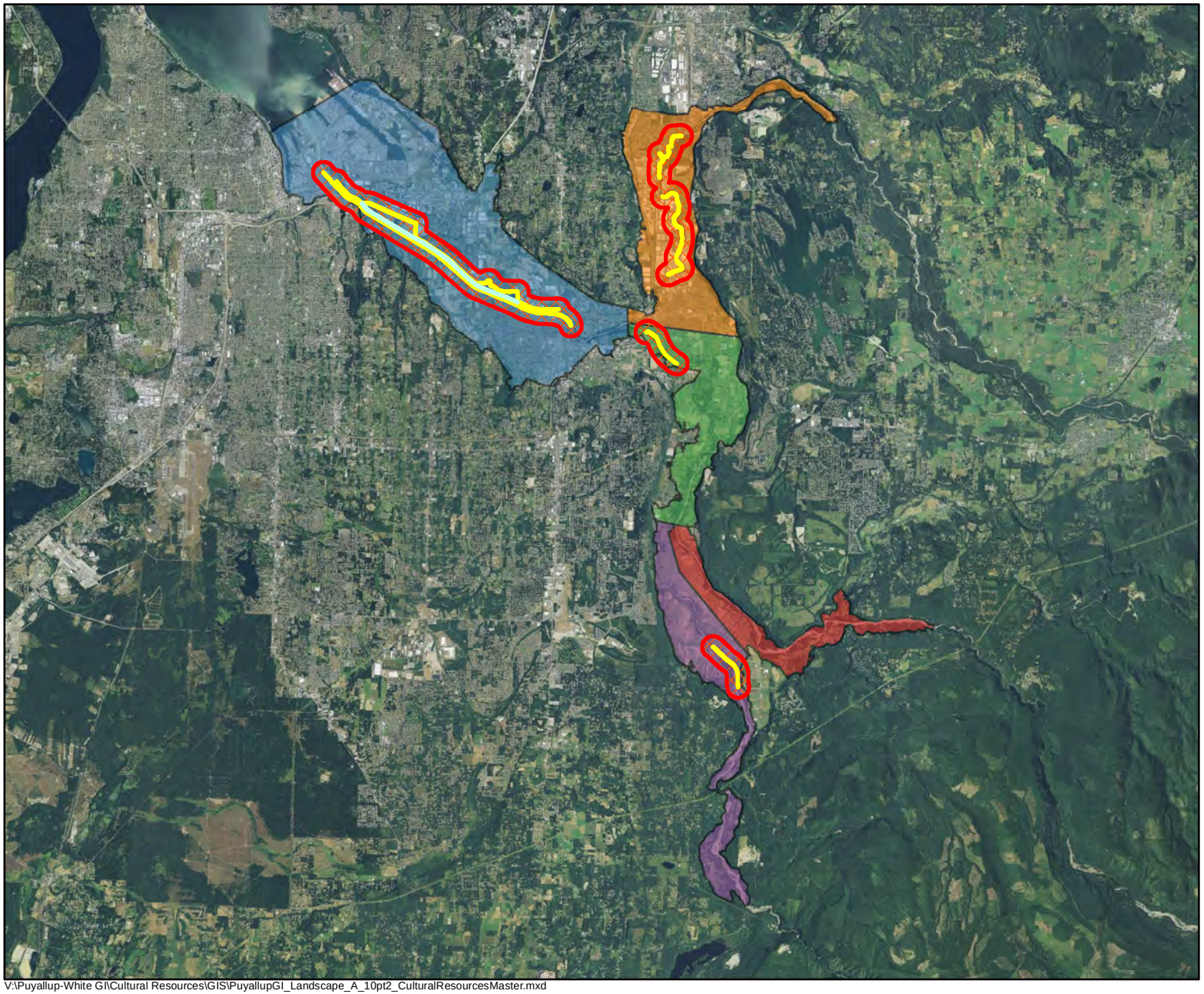
10/7/2014 4:53:58 PM

MAP 2

Puyallup General Investigation and Feasibility Study



Legend

Area of Potential Effect 1320' Buffer

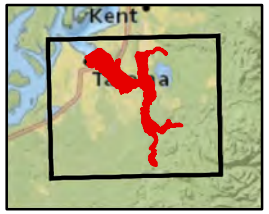
- Levee Removal
- Levee Raise / Setback / Floodwalls
- APE - 1320' Buffered Footprint

Puyallup GI STUDY AREA

NAME

- CARBON
- LOWER PUYALLUP
- MIDDLE PUYALLUP
- UPPER PUYALLUP
- WHITE

Location Map



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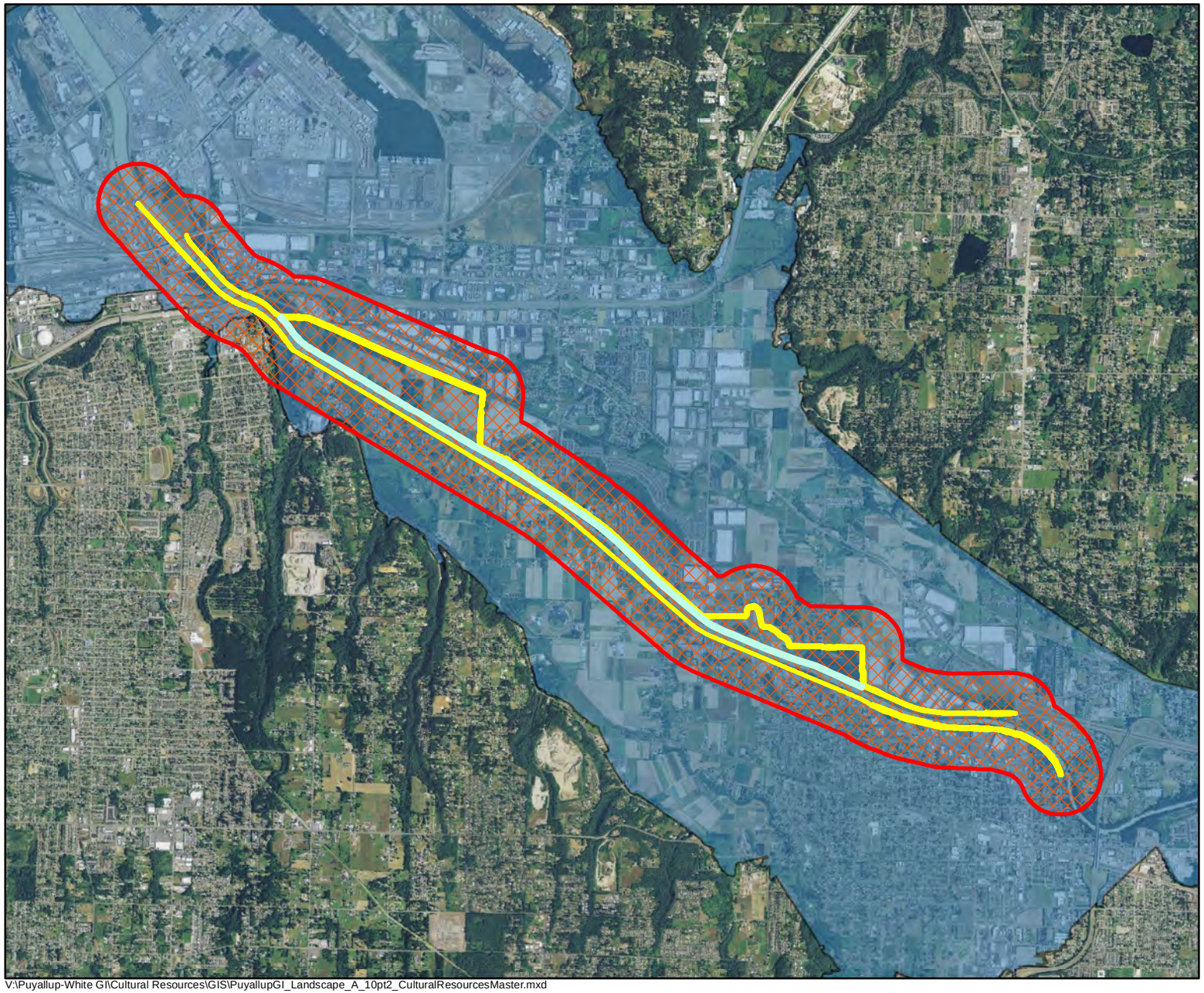
MAP 3

Puyallup General Investigation and Feasibility Study



Legend

Area of Potential Effect 1320' Buffer

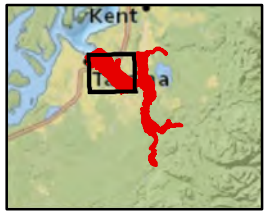
- Levee Removal
- Levee Raise / Setback / Floodwalls
- APE - 1320' Buffered Footprint

Puyallup GI STUDY AREA

NAME

- CARBON
- LOWER PUYALLUP
- MIDDLE PUYALLUP
- UPPER PUYALLUP
- WHITE

Location Map



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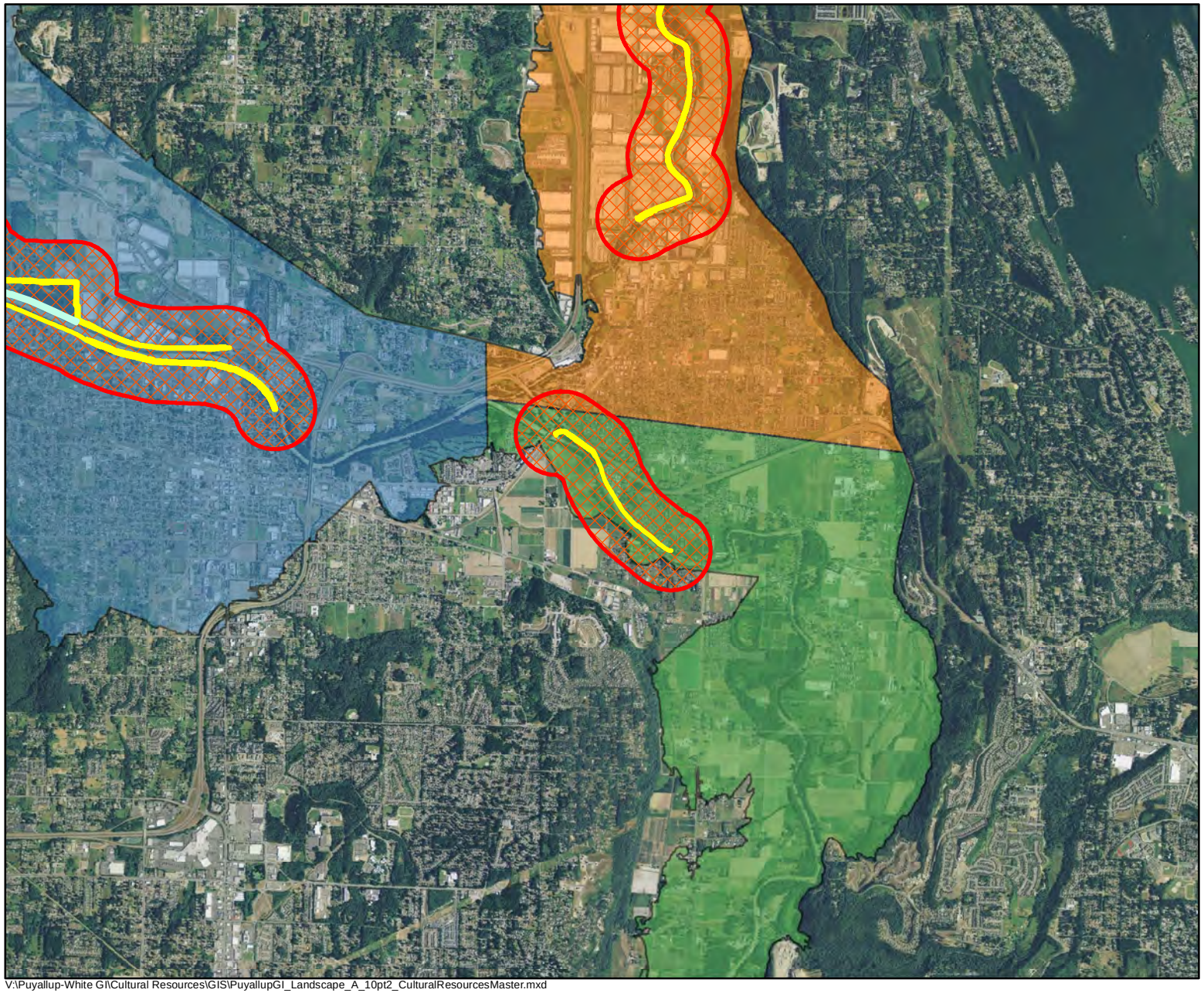
MAP 4

Puyallup General Investigation and Feasibility Study



Legend

Area of Potential Effect 1320' Buffer

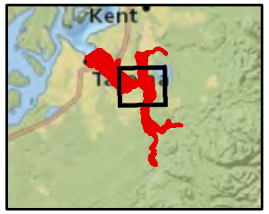
- Levee Removal
- Levee Raise / Setback / Floodwalls
- APE - 1320' Buffered Footprint

Puyallup GI STUDY AREA

NAME

- CARBON
- LOWER PUYALLUP
- MIDDLE PUYALLUP
- UPPER PUYALLUP
- WHITE

Location Map



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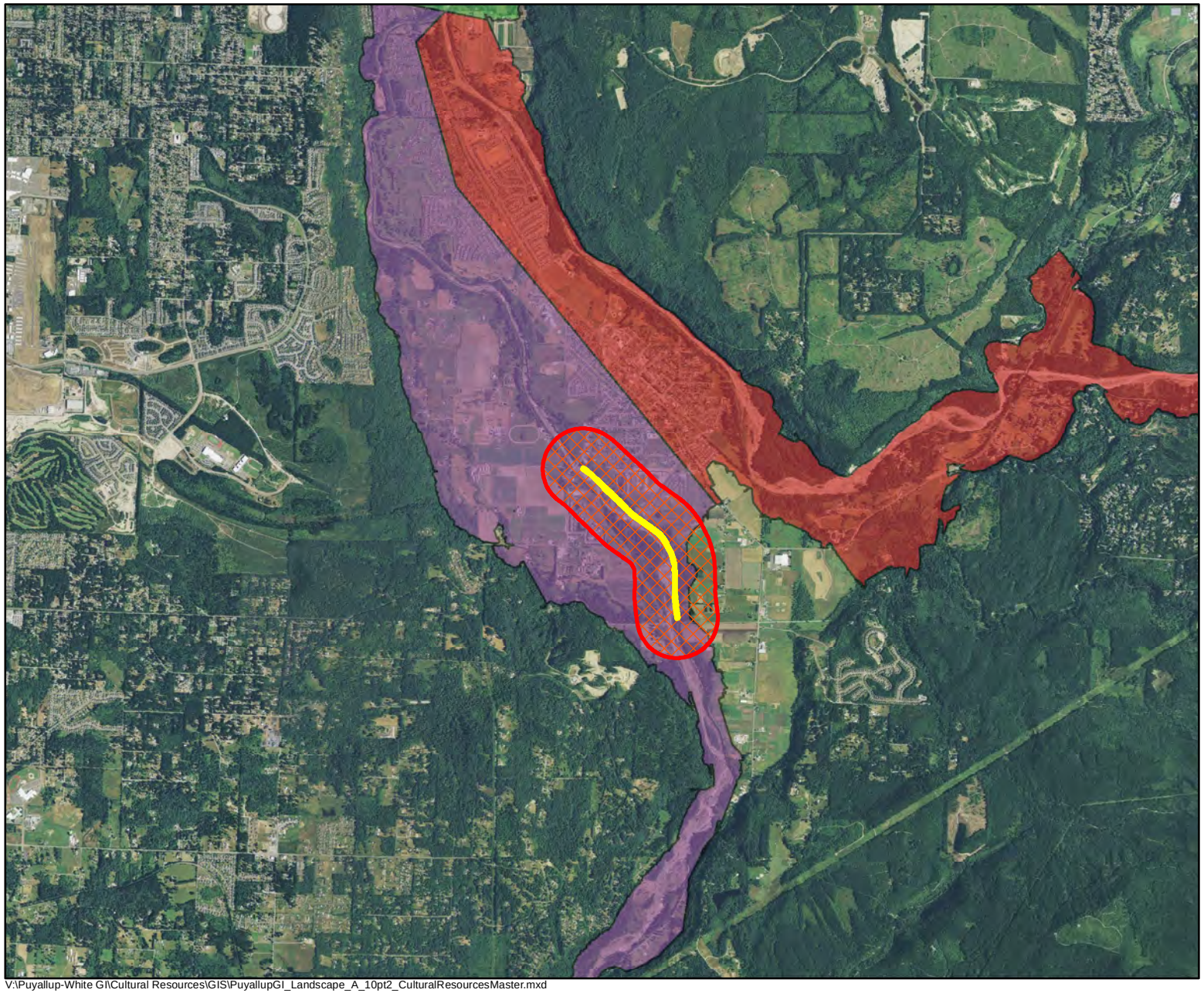
MAP 5

Puyallup General Investigation and Feasibility Study



Legend

Area of Potential Effect 1320' Buffer

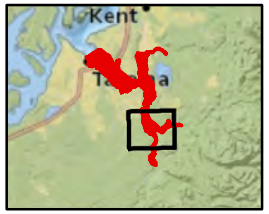
- Levee Removal
- Levee Raise / Setback / Floodwalls
- APE - 1320' Buffered Footprint

Puyallup GI STUDY AREA

NAME

- CARBON
- LOWER PUYALLUP
- MIDDLE PUYALLUP
- UPPER PUYALLUP
- WHITE

Location Map



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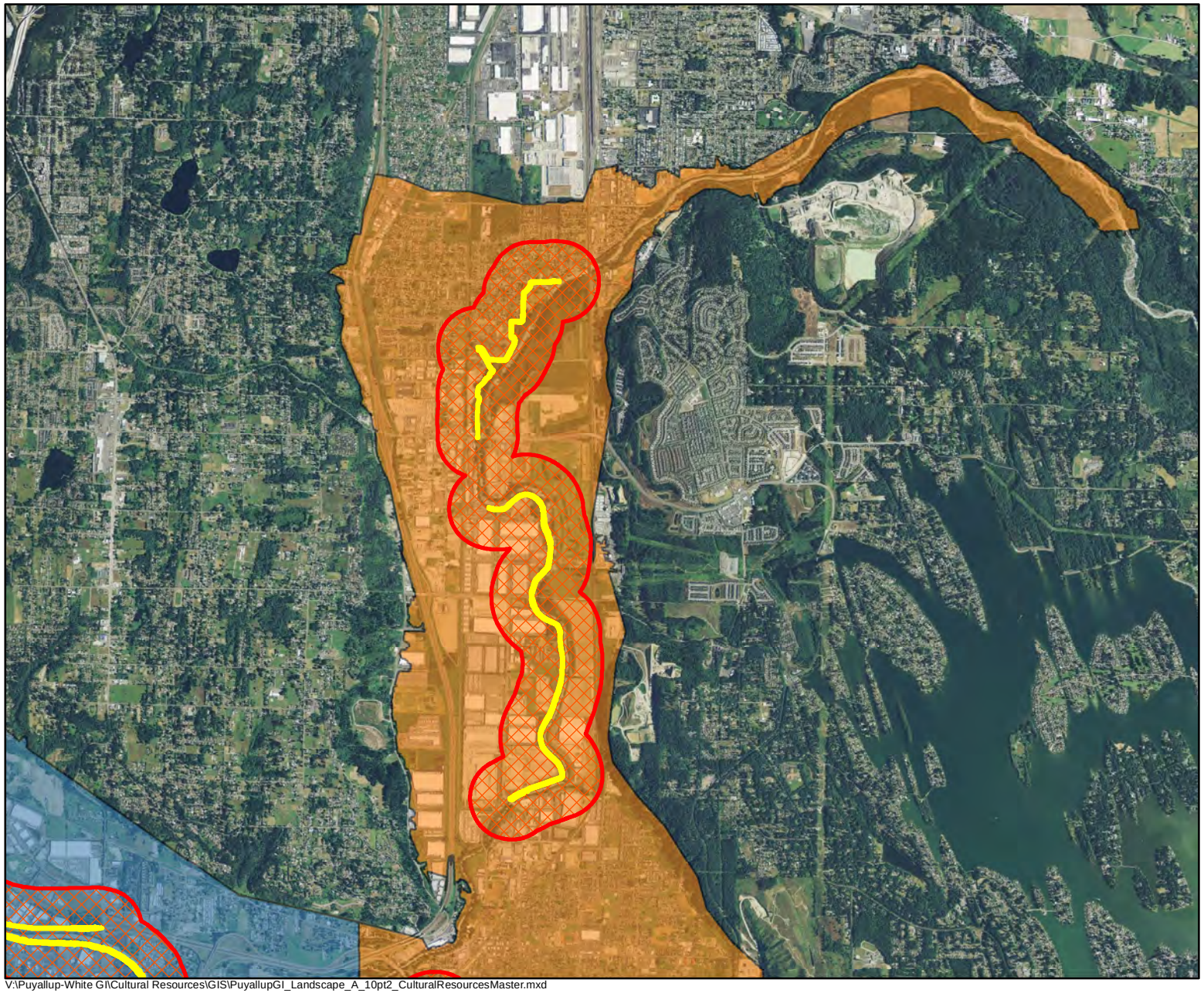
MAP 6

Puyallup General Investigation and Feasibility Study



Legend

Area of Potential Effect 1320' Buffer

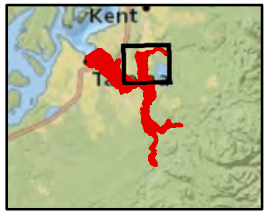
- Levee Removal
- Levee Raise / Setback / Floodwalls
- APE - 1320' Buffered Footprint

Puyallup GI STUDY AREA

NAME

- CARBON
- LOWER PUYALLUP
- MIDDLE PUYALLUP
- UPPER PUYALLUP
- WHITE

Location Map



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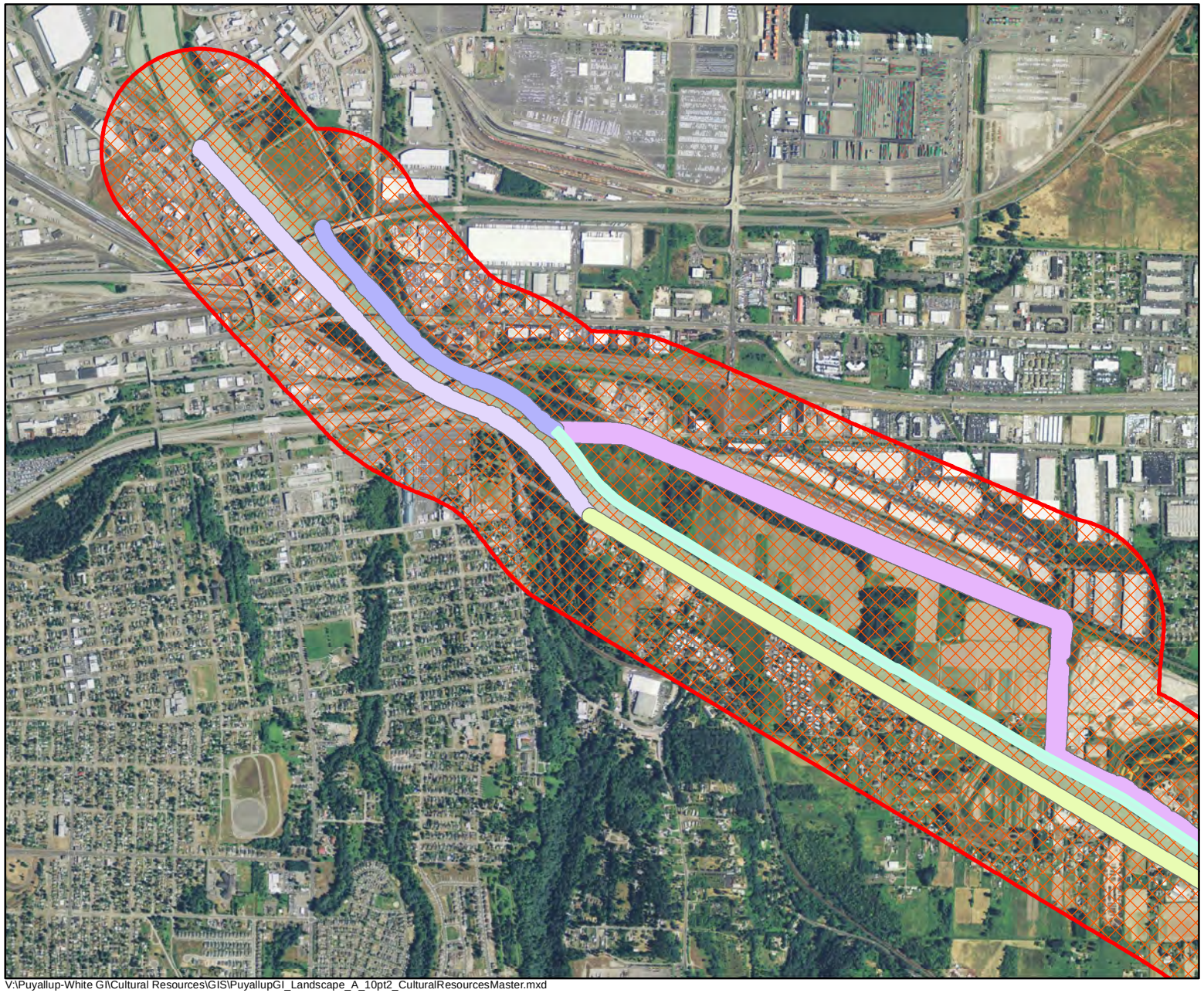
MAP 7

Puyallup General Investigation and Feasibility Study



Legend

Area of Potential Effect 100'/ 1320' Buffered Segments

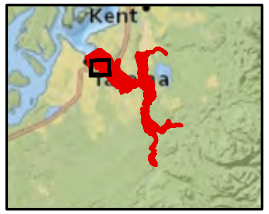
Levee Removal

APE - 100' Buffered Footprint

NAME

- Butte Ave Levee
- HWY 410 Floodwall
- HWY 410 Levee
- Jones Levee Raise in Place
- Lowev White River Levee
- North Levee Road Setback
- Pacific Park Levee
- Puyallup Left Bank Federal Levee
- Puyallup Right Bank Federal Levee
- River Road Levee Floodwall
- Riverwalk Levee
- APE - 1320' Buffered Footprint

Location Map



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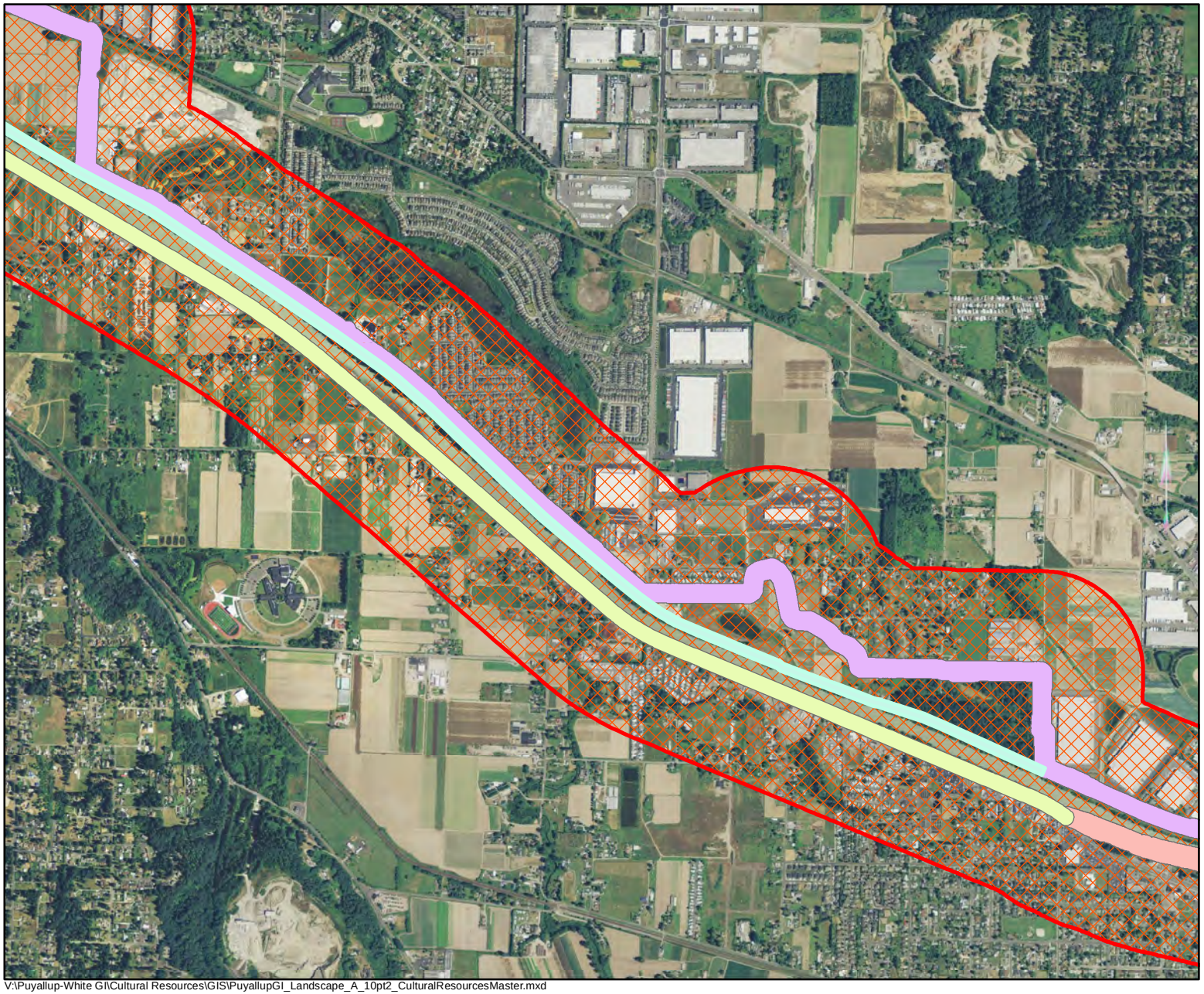
MAP 8

Puyallup General Investigation and Feasibility Study



Legend

Area of Potential Effect 100'/ 1320' Buffered Segments

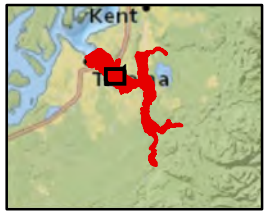
- Levee Removal

APE - 100' Buffered Footprint

NAME

- Butte Ave Levee
- HWY 410 Floodwall
- HWY 410 Levee
- Jones Levee Raise in Place
- Lowev White River Levee
- North Levee Road Setback
- Pacific Park Levee
- Puyallup Left Bank Federal Levee
- Puyallup Right Bank Federal Levee
- River Road Levee Floodwall
- Riverwalk Levee
- APE - 1320' Buffered Footprint

Location Map



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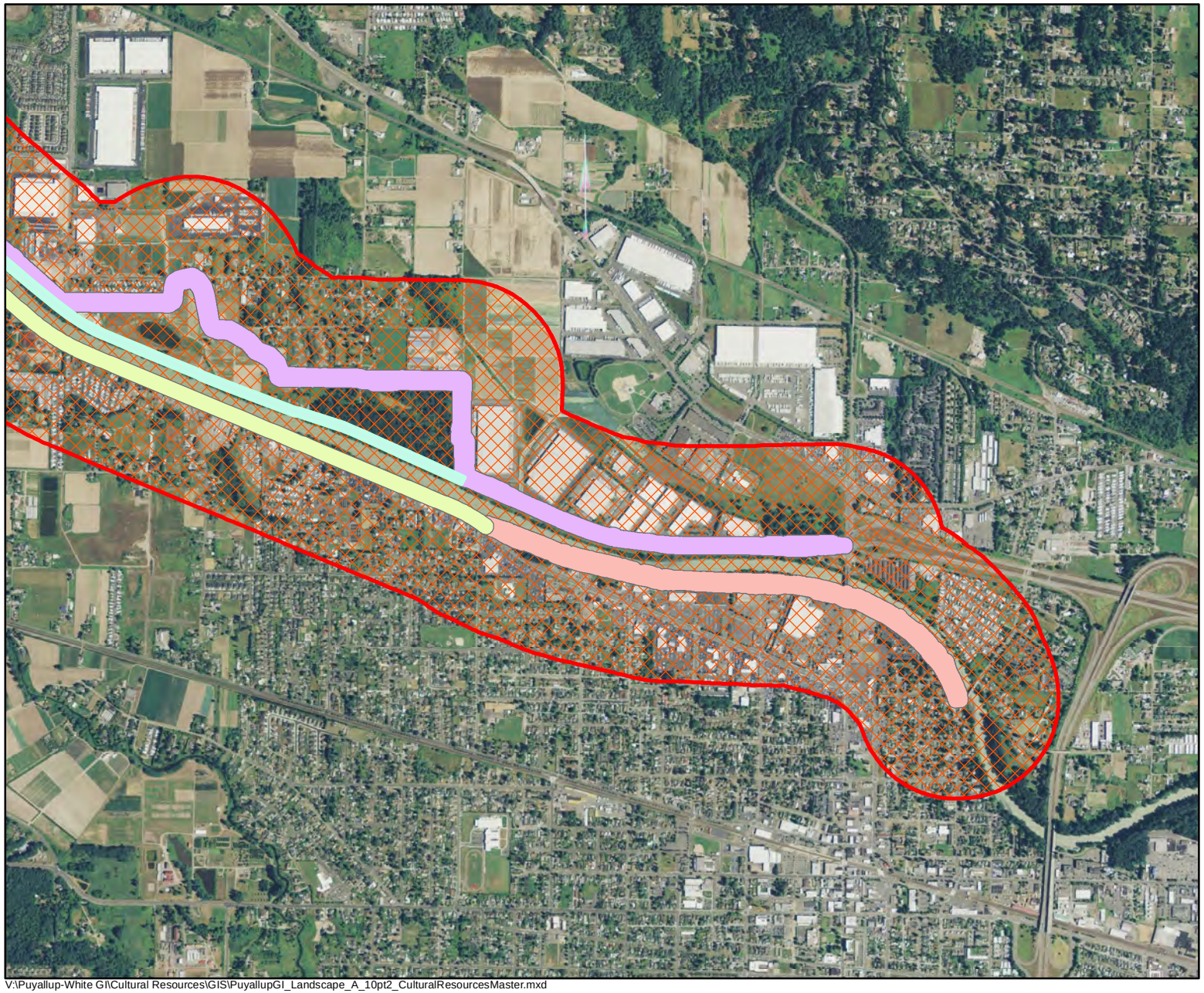
MAP 9

Puyallup General Investigation and Feasibility Study



Legend

Area of Potential Effect 100'/ 1320' Buffered Segments

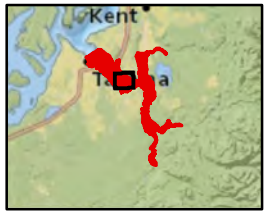
- Levee Removal

APE - 100' Buffered Footprint

NAME

- Butte Ave Levee
- HWY 410 Floodwall
- HWY 410 Levee
- Jones Levee Raise in Place
- Lowev White River Levee
- North Levee Road Setback
- Pacific Park Levee
- Puyallup Left Bank Federal Levee
- Puyallup Right Bank Federal Levee
- River Road Levee Floodwall
- Riverwalk Levee
- APE - 1320' Buffered Footprint

Location Map



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MAP 10

Puyallup General Investigation and Feasibility Study

Legend

Area of Potential Effect 100'/ 1320' Buffered Segments

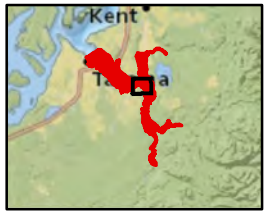
Levee Removal

APE - 100' Buffered Footprint

NAME

- Butte Ave Levee
- HWY 410 Floodwall
- HWY 410 Levee
- Jones Levee Raise in Place
- Lowev White River Levee
- North Levee Road Setback
- Pacific Park Levee
- Puyallup Left Bank Federal Levee
- Puyallup Right Bank Federal Levee
- River Road Levee Floodwall
- Riverwalk Levee
- APE - 1320' Buffered Footprint

Location Map



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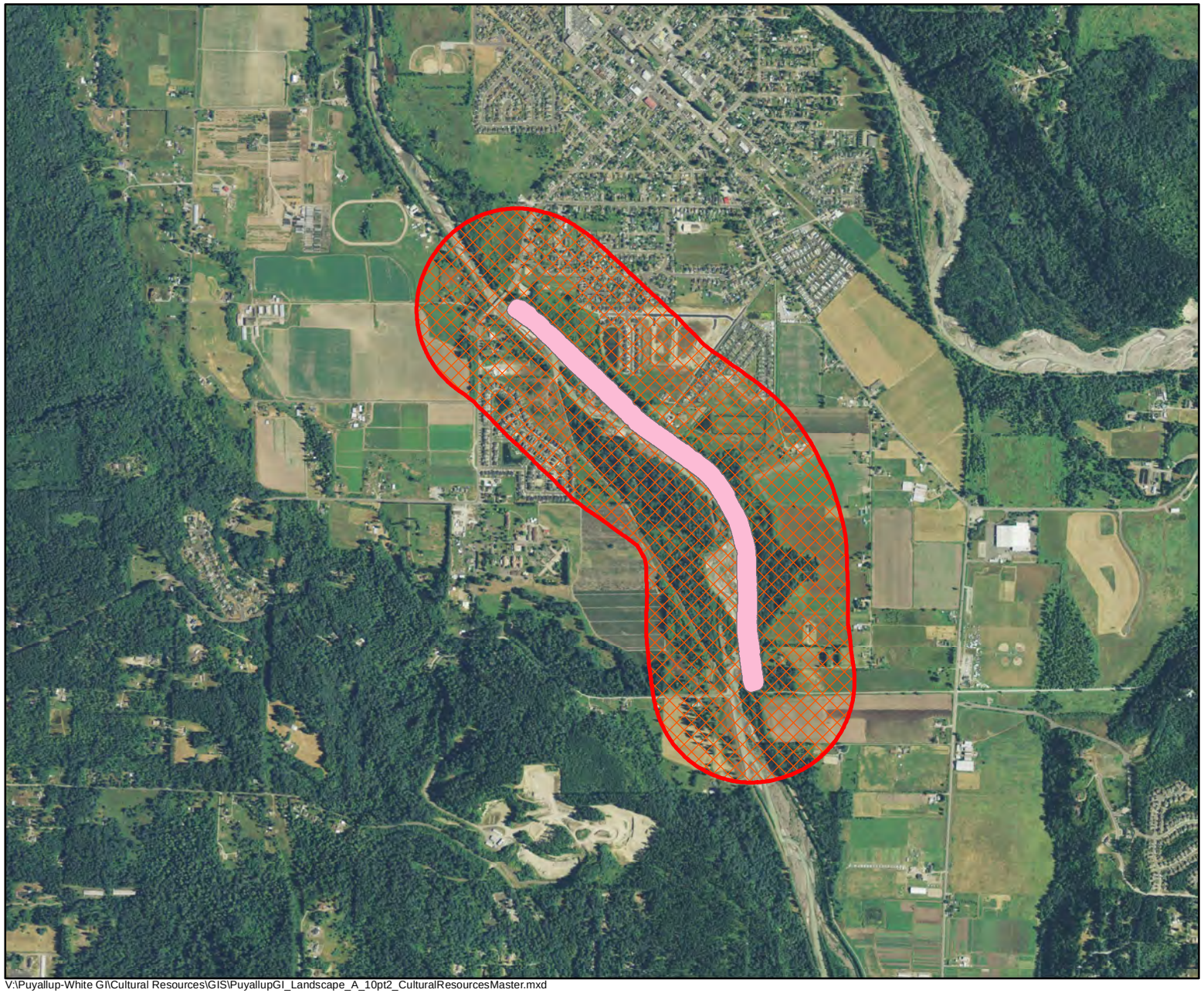
MAP 11

Puyallup General Investigation and Feasibility Study



Legend

Area of Potential Effect 100'/ 1320' Buffered Segments

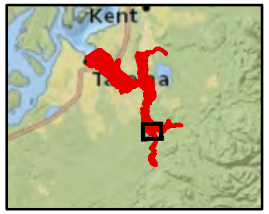
Levee Removal

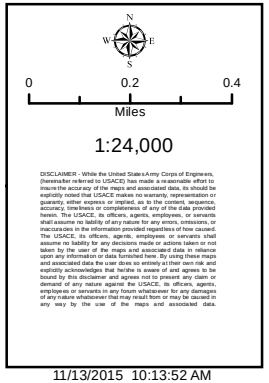
APE - 100' Buffered Footprint

NAME

- Butte Ave Levee
- HWY 410 Floodwall
- HWY 410 Levee
- Jones Levee Raise in Place
- Lowev White River Levee
- North Levee Road Setback
- Pacific Park Levee
- Puyallup Left Bank Federal Levee
- Puyallup Right Bank Federal Levee
- River Road Levee Floodwall
- Riverwalk Levee
- APE - 1320' Buffered Footprint

Location Map





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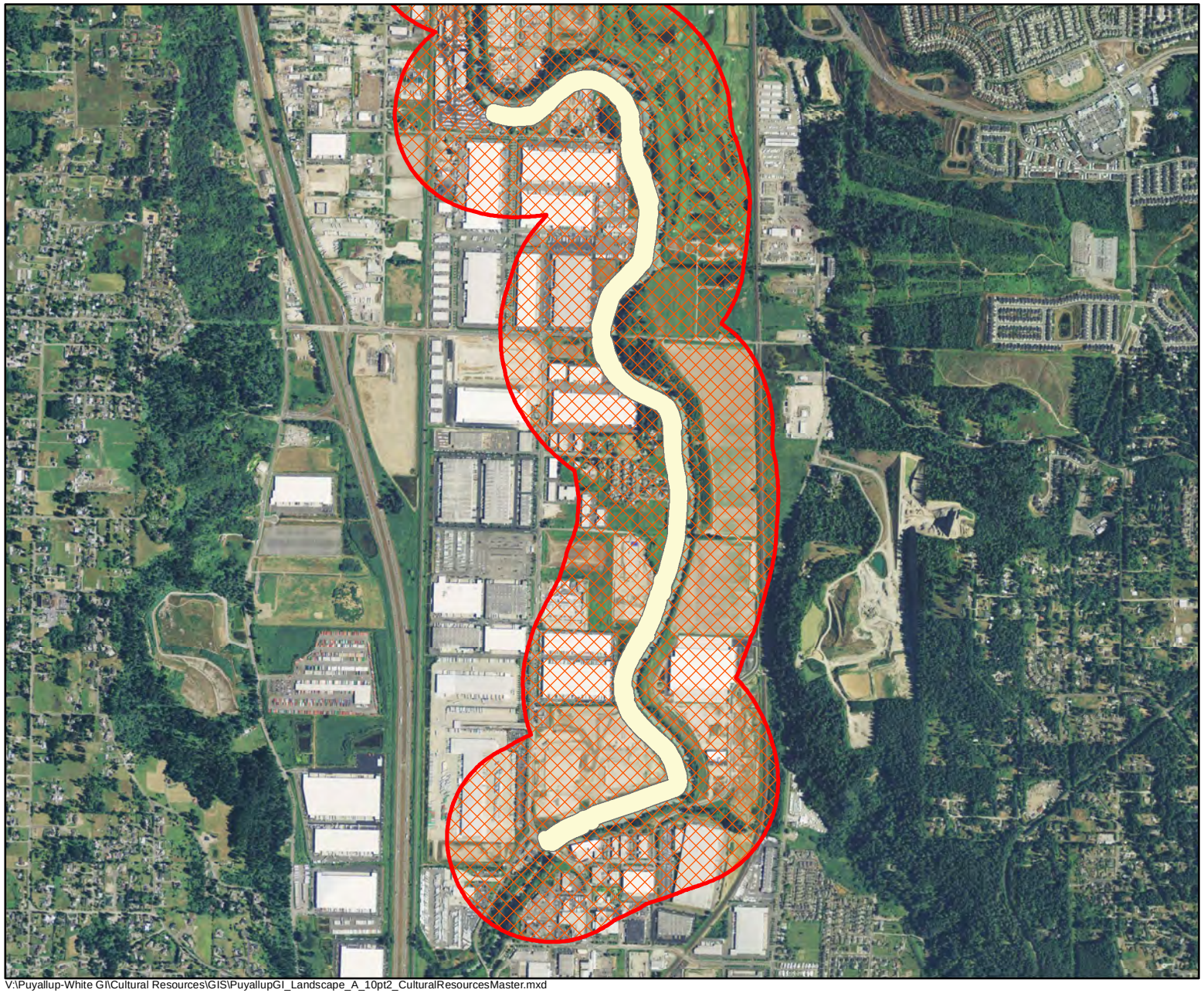
MAP 12

Puyallup General Investigation and Feasibility Study



Legend

Area of Potential Effect 100'/ 1320' Buffered Segments

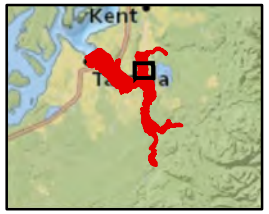
- Levee Removal

APE - 100' Buffered Footprint

NAME

- Butte Ave Levee
- HWY 410 Floodwall
- HWY 410 Levee
- Jones Levee Raise in Place
- Lowev White River Levee
- North Levee Road Setback
- Pacific Park Levee
- Puyallup Left Bank Federal Levee
- Puyallup Right Bank Federal Levee
- River Road Levee Floodwall
- Riverwalk Levee
- APE - 1320' Buffered Footprint

Location Map



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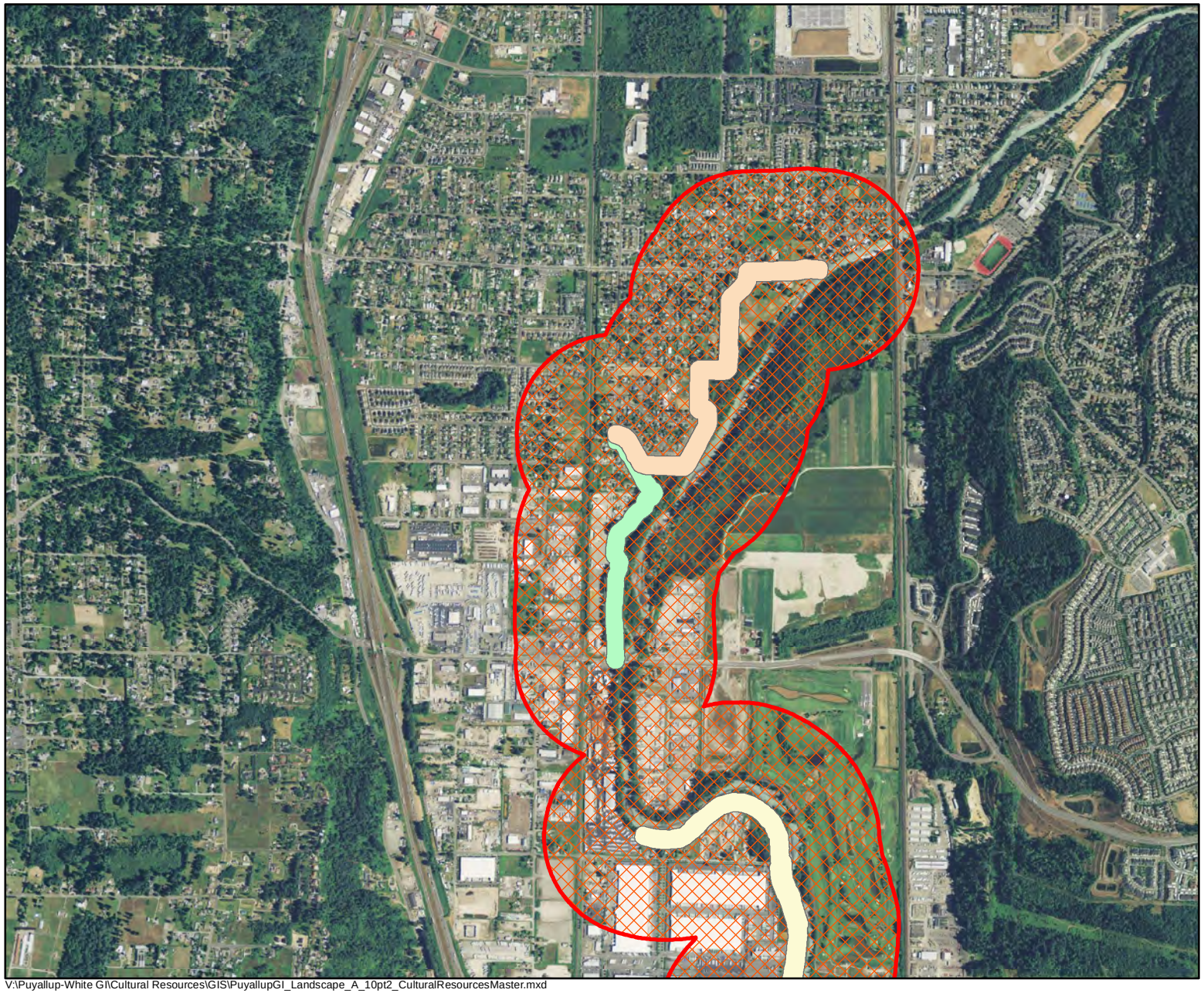
MAP 13

Puyallup General Investigation and Feasibility Study



Legend

Area of Potential Effect 100'/ 1320' Buffered Segments

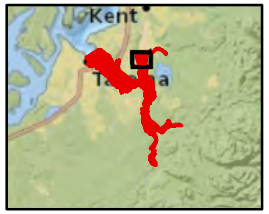
- Levee Removal

APE - 100' Buffered Footprint

NAME

- Butte Ave Levee
- HWY 410 Floodwall
- HWY 410 Levee
- Jones Levee Raise in Place
- Lowev White River Levee
- North Levee Road Setback
- Pacific Park Levee
- Puyallup Left Bank Federal Levee
- Puyallup Right Bank Federal Levee
- River Road Levee Floodwall
- Riverwalk Levee
- APE - 1320' Buffered Footprint

Location Map



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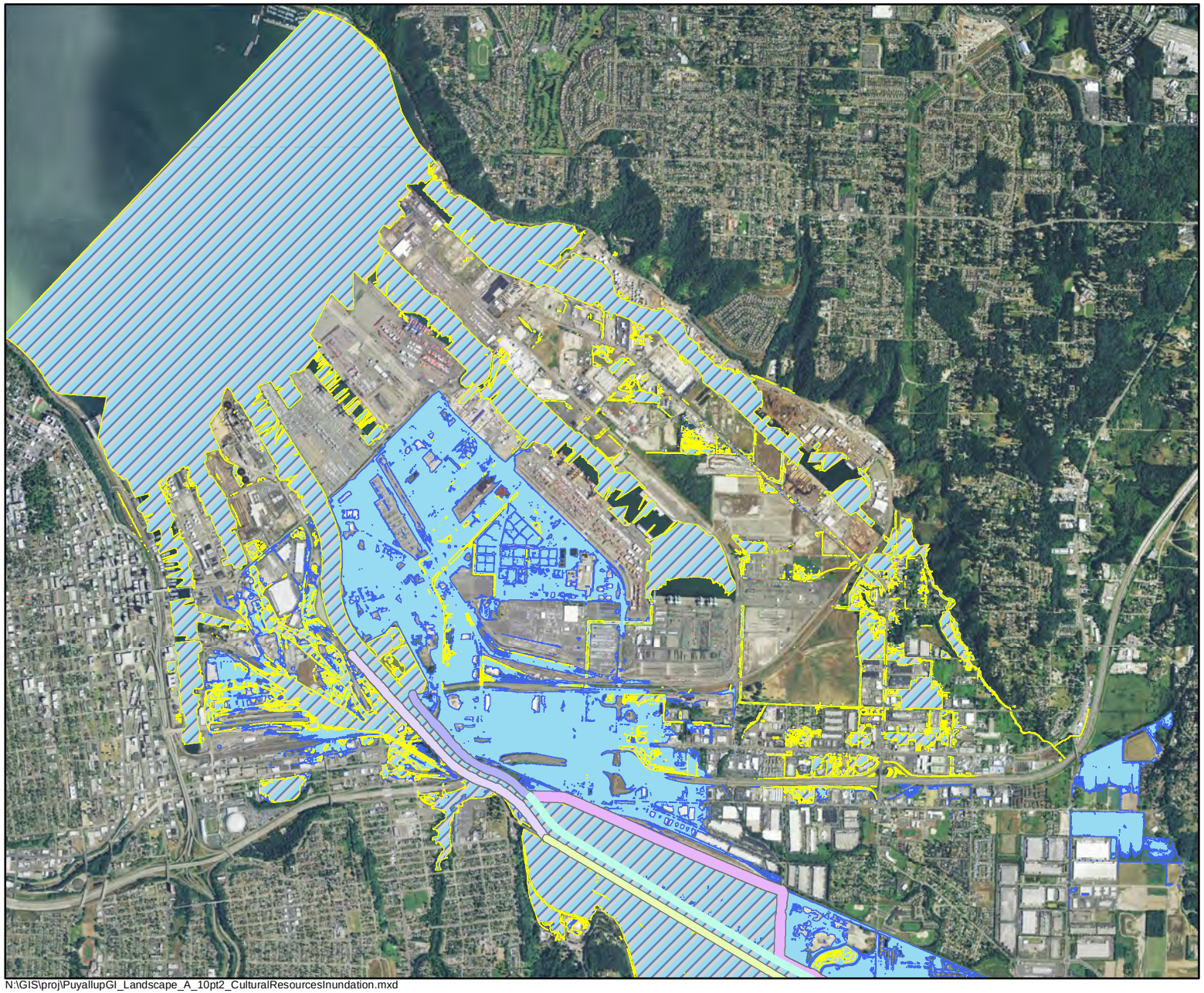
MAP 14

Puyallup General Investigation and Feasibility Study



Legend

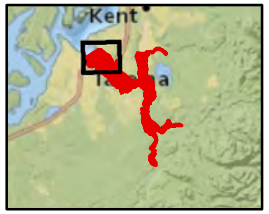
Flood Inundation Comparison
Without and With Project
1% ACE - 100 Year Flood

- Levee Removal

APE - 100' Buffered Footprint

- Butte Ave Levee
- HWY 410 Floodwall
- HWY 410 Levee
- Jones Levee Raise in Place
- Lowev White River Levee
- North Levee Road Setback
- Pacific Park Levee
- Puyallup Left Bank Federal Levee
- Puyallup Right Bank Federal Levee
- River Road Levee Floodwall
- Riverwalk Levee
- Puyallup GI - 100 Year Flood Future With Project
- Puyallup GI - 100 Year Flood Future Without Project Max Breach

Location Map



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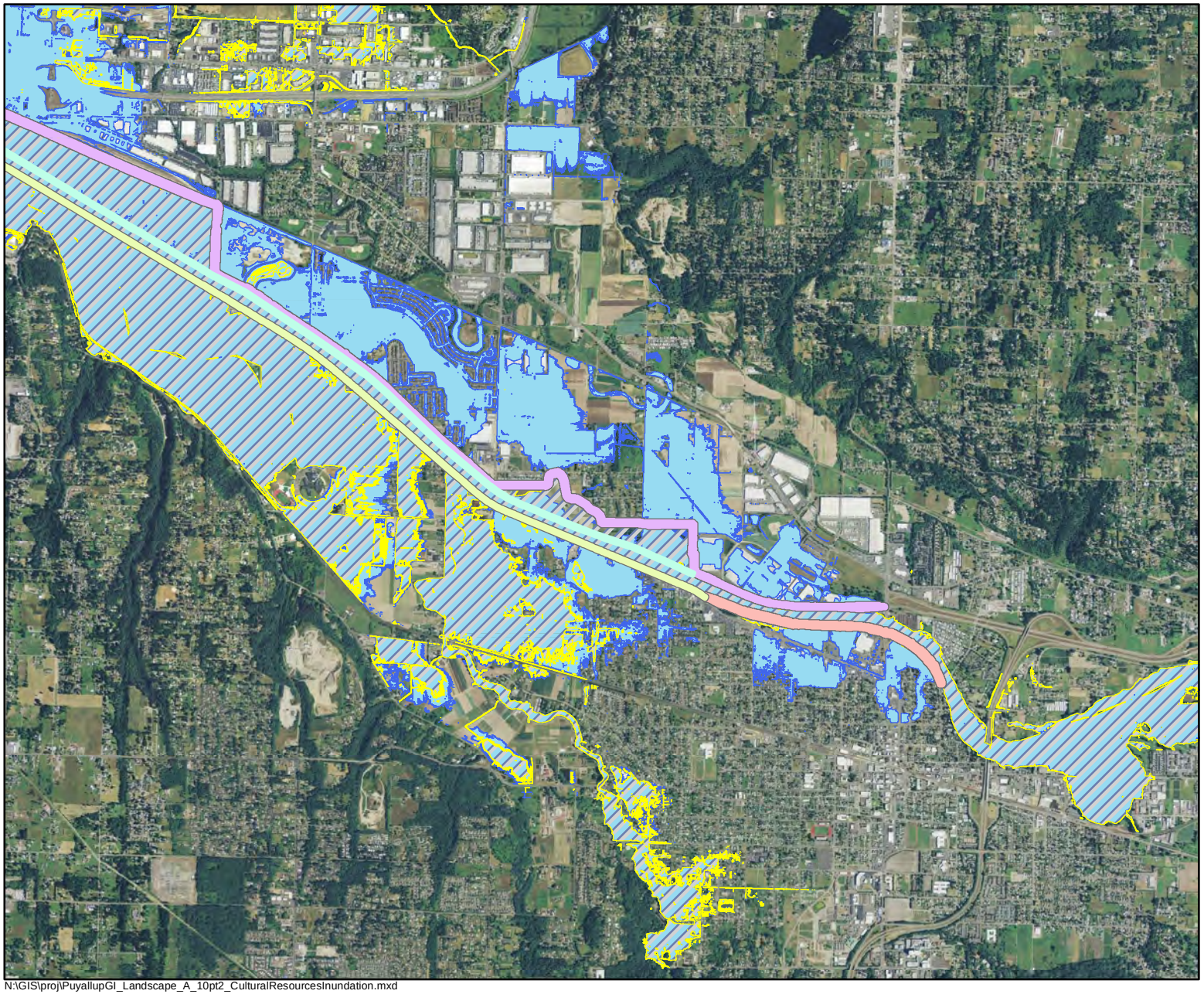
MAP 15

Puyallup General Investigation and Feasibility Study



Legend

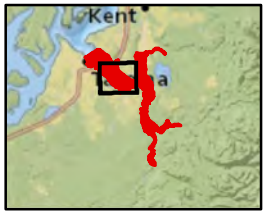
Flood Inundation Comparison
Without and With Project
1% ACE - 100 Year Flood

- Levee Removal

APE - 100' Buffered Footprint

- Butte Ave Levee
- HWY 410 Floodwall
- HWY 410 Levee
- Jones Levee Raise in Place
- Lowev White River Levee
- North Levee Road Setback
- Pacific Park Levee
- Puyallup Left Bank Federal Levee
- Puyallup Right Bank Federal Levee
- River Road Levee Floodwall
- Riverwalk Levee
- Puyallup GI - 100 Year Flood Future With Project
- Puyallup GI - 100 Year Flood Future Without Project Max Breach

Location Map



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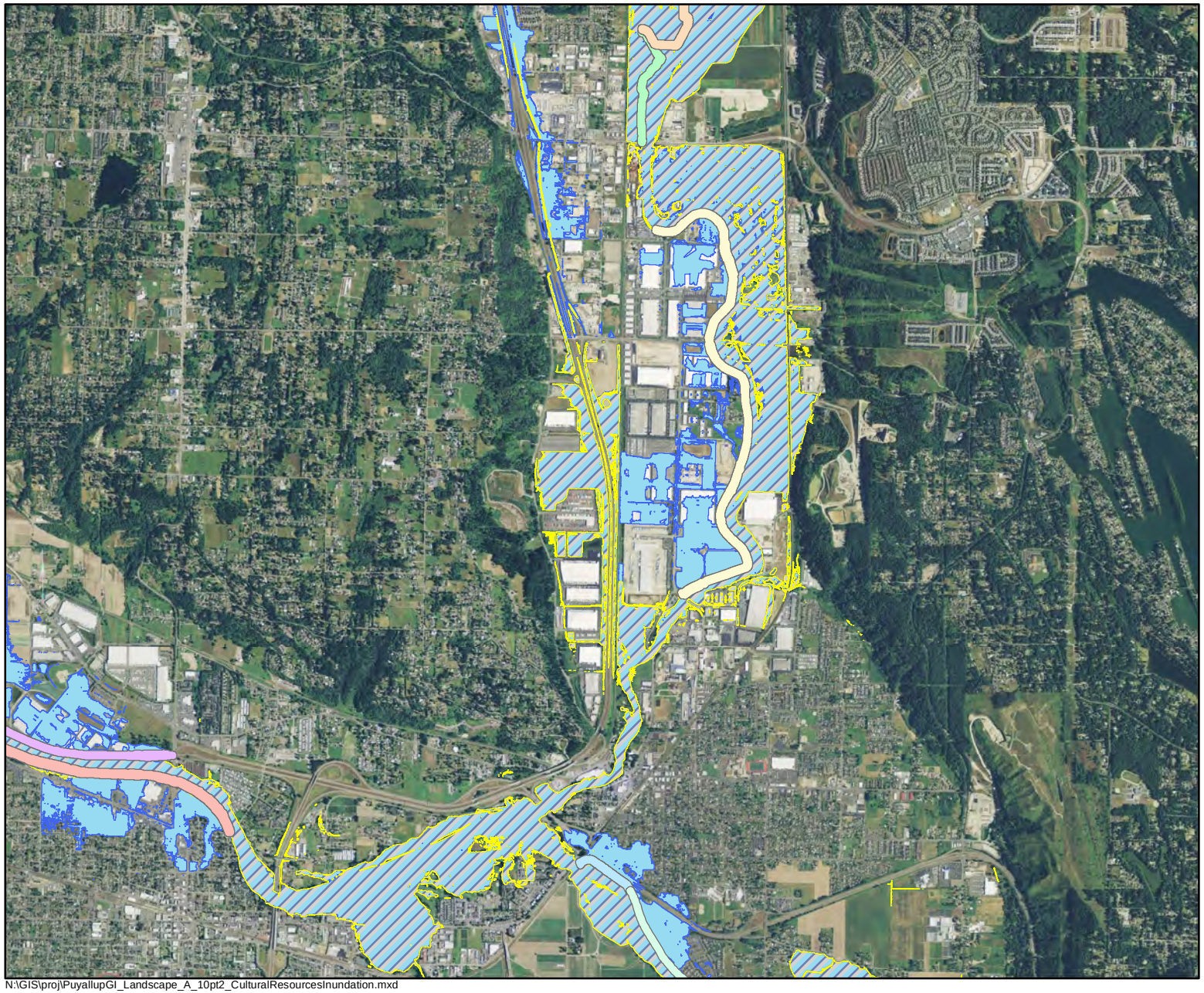
MAP 16

Puyallup General Investigation and Feasibility Study



Legend

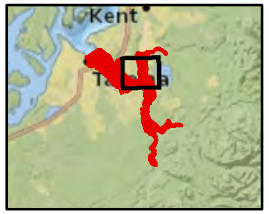
Flood Inundation Comparison
Without and With Project
1% ACE - 100 Year Flood

- Levee Removal

APE - 100' Buffered Footprint

- Butte Ave Levee
- HWY 410 Floodwall
- HWY 410 Levee
- Jones Levee Raise in Place
- Lowev White River Levee
- North Levee Road Setback
- Pacific Park Levee
- Puyallup Left Bank Federal Levee
- Puyallup Right Bank Federal Levee
- River Road Levee Floodwall
- Riverwalk Levee
- Puyallup GI - 100 Year Flood Future With Project
- Puyallup GI - 100 Year Flood Future Without Project Max Breach

Location Map



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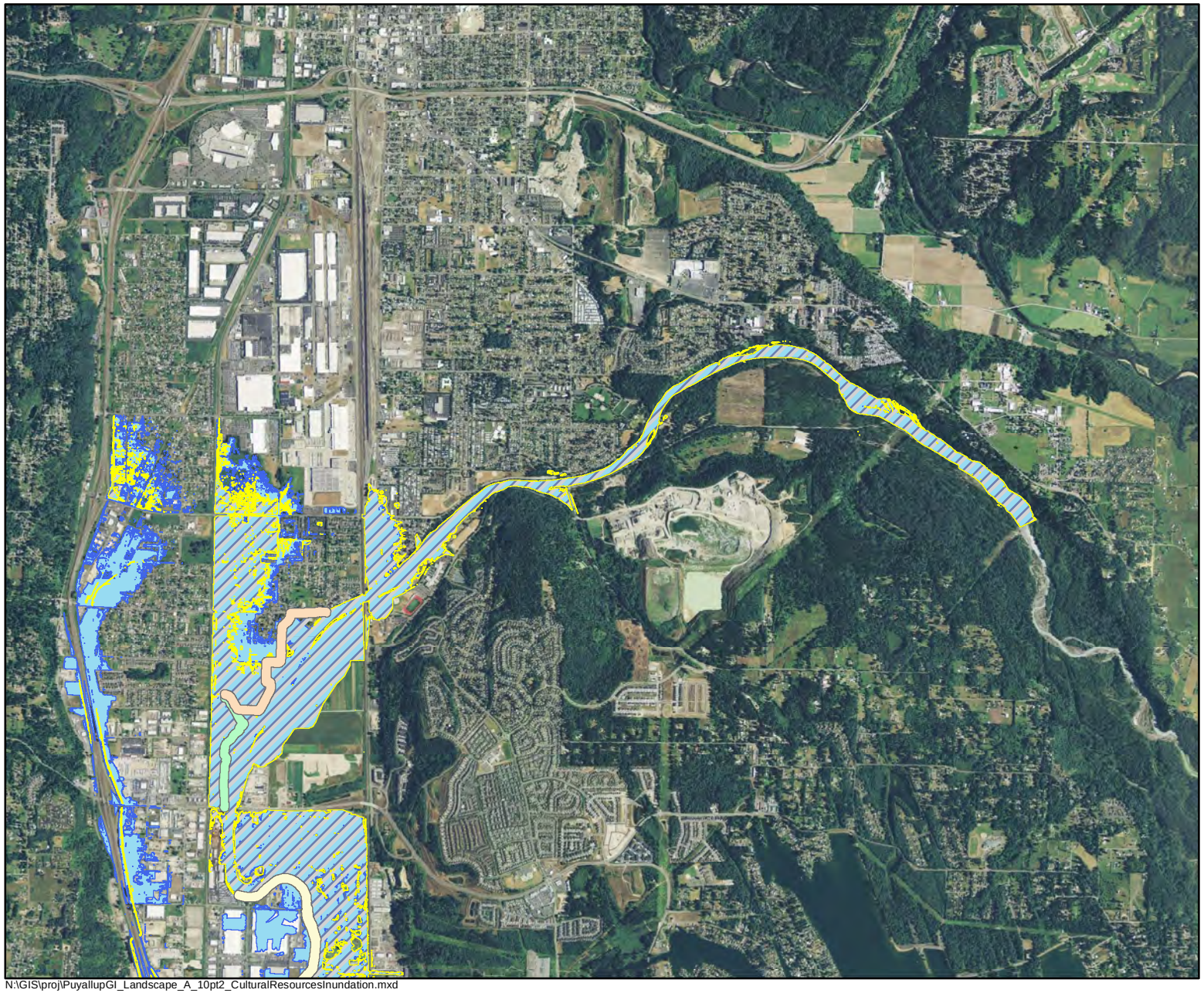
MAP 17

Puyallup General Investigation and Feasibility Study



Legend

Flood Inundation Comparison
Without and With Project
1% ACE - 100 Year Flood

- Levee Removal

APE - 100' Buffered Footprint

- Butte Ave Levee
- HWY 410 Floodwall
- HWY 410 Levee
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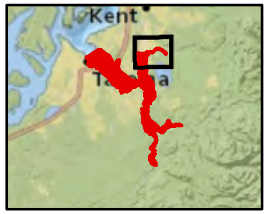
- Puyallup Right Bank Federal Levee
- River Road Levee Floodwall
- Riverwalk Levee
- Puyallup GI - 100 Year Flood Future With Project
- Puyallup GI - 100 Year Flood Future Without Project Max Breach

Location Map



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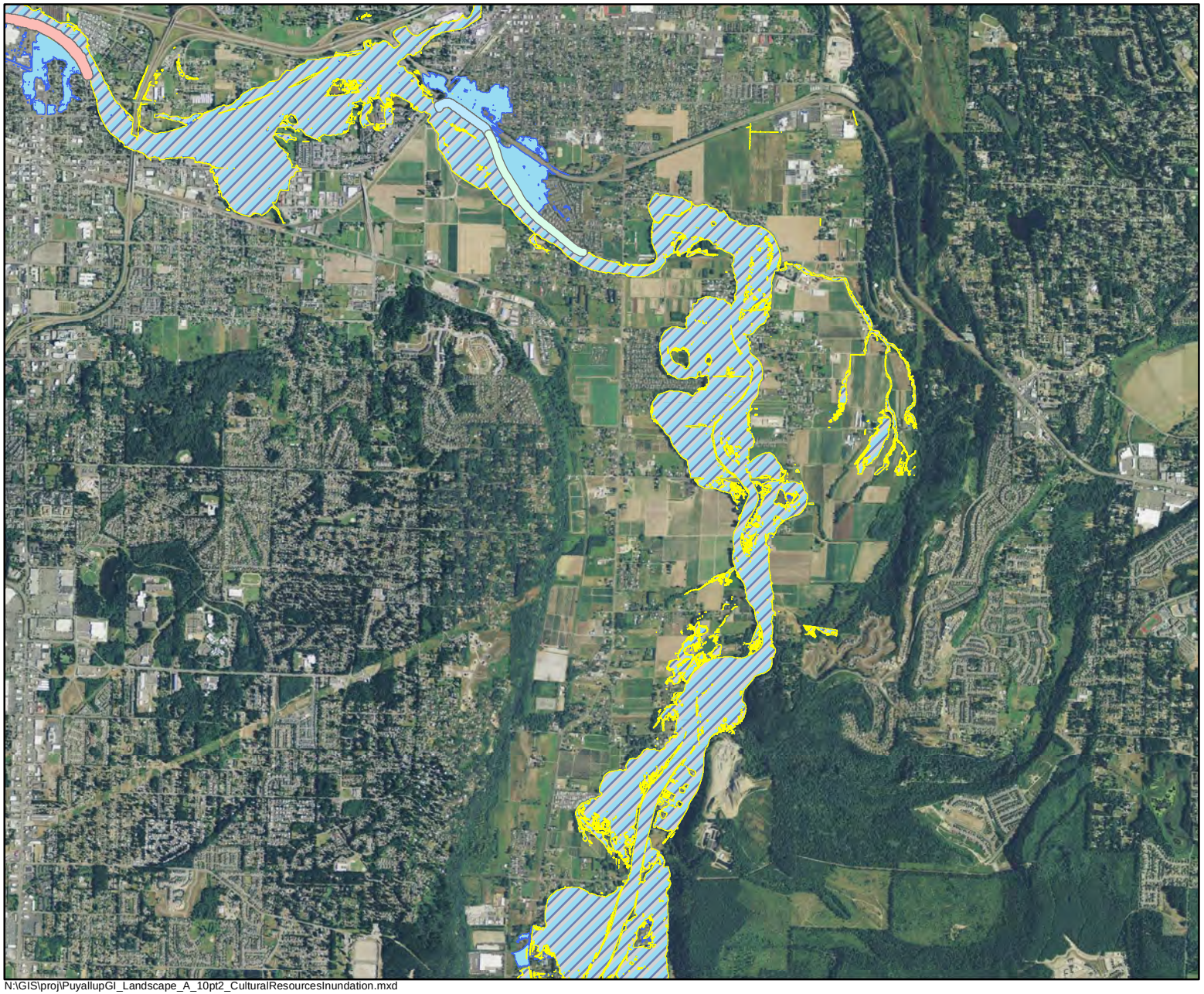
MAP 18

Puyallup General Investigation and Feasibility Study



Legend

Flood Inundation Comparison
Without and With Project
1% ACE - 100 Year Flood

- Levee Removal

APE - 100' Buffered Footprint

- Butte Ave Levee
- HWY 410 Floodwall
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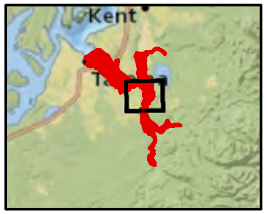
- River Road Levee Floodwall
- Riverwalk Levee
- Puyallup GI - 100 Year Flood Future With Project
- Puyallup GI - 100 Year Flood Future Without Project Max Breach

Location Map



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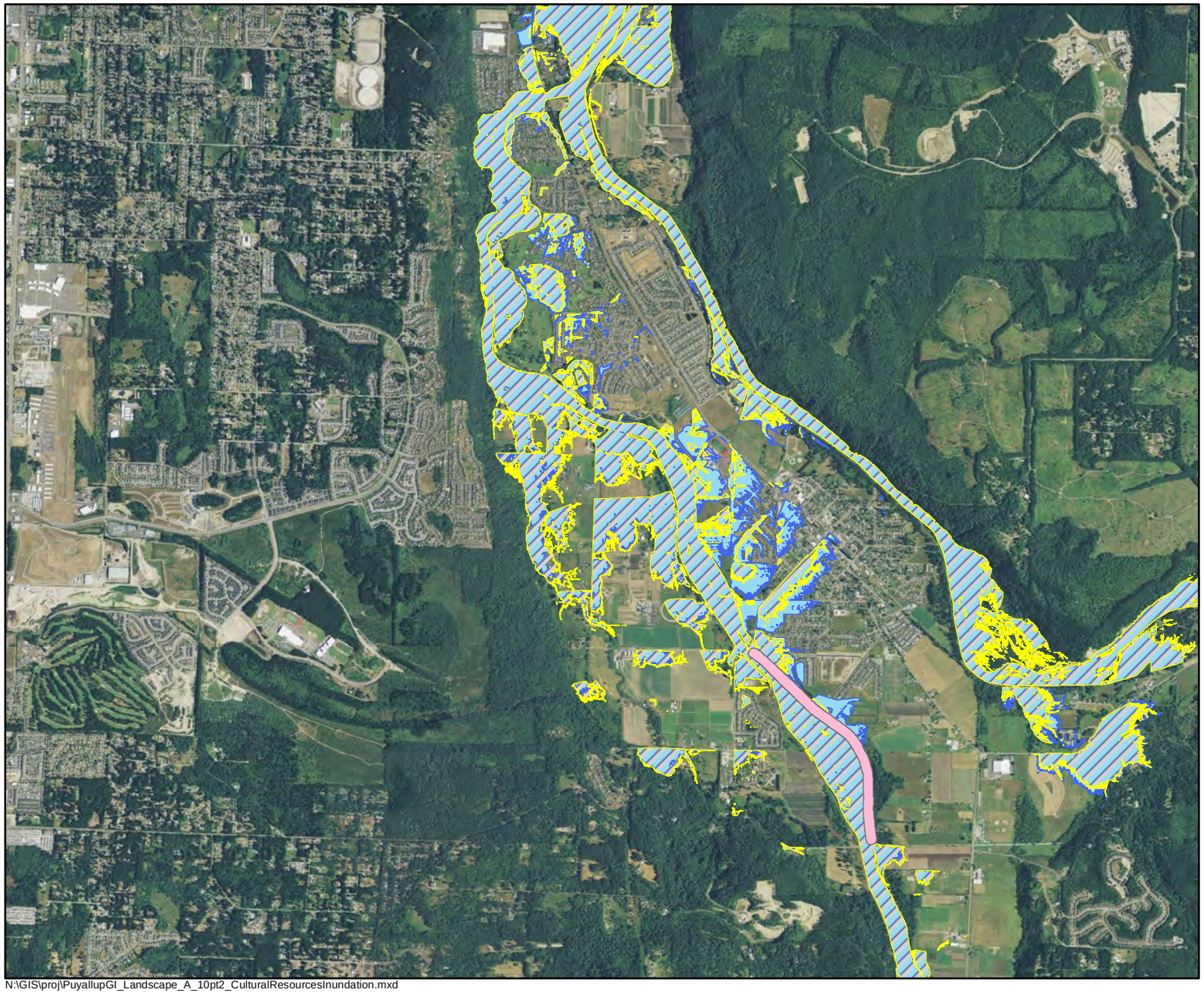
MAP 19

Puyallup General Investigation and Feasibility Study



Legend

Flood Inundation Comparison
Without and With Project
1% ACE - 100 Year Flood

- Levee Removal

APE - 100' Buffered Footprint

- Butte Ave Levee
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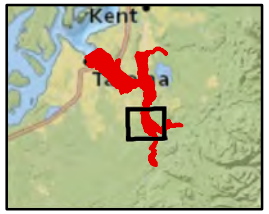
Location Map



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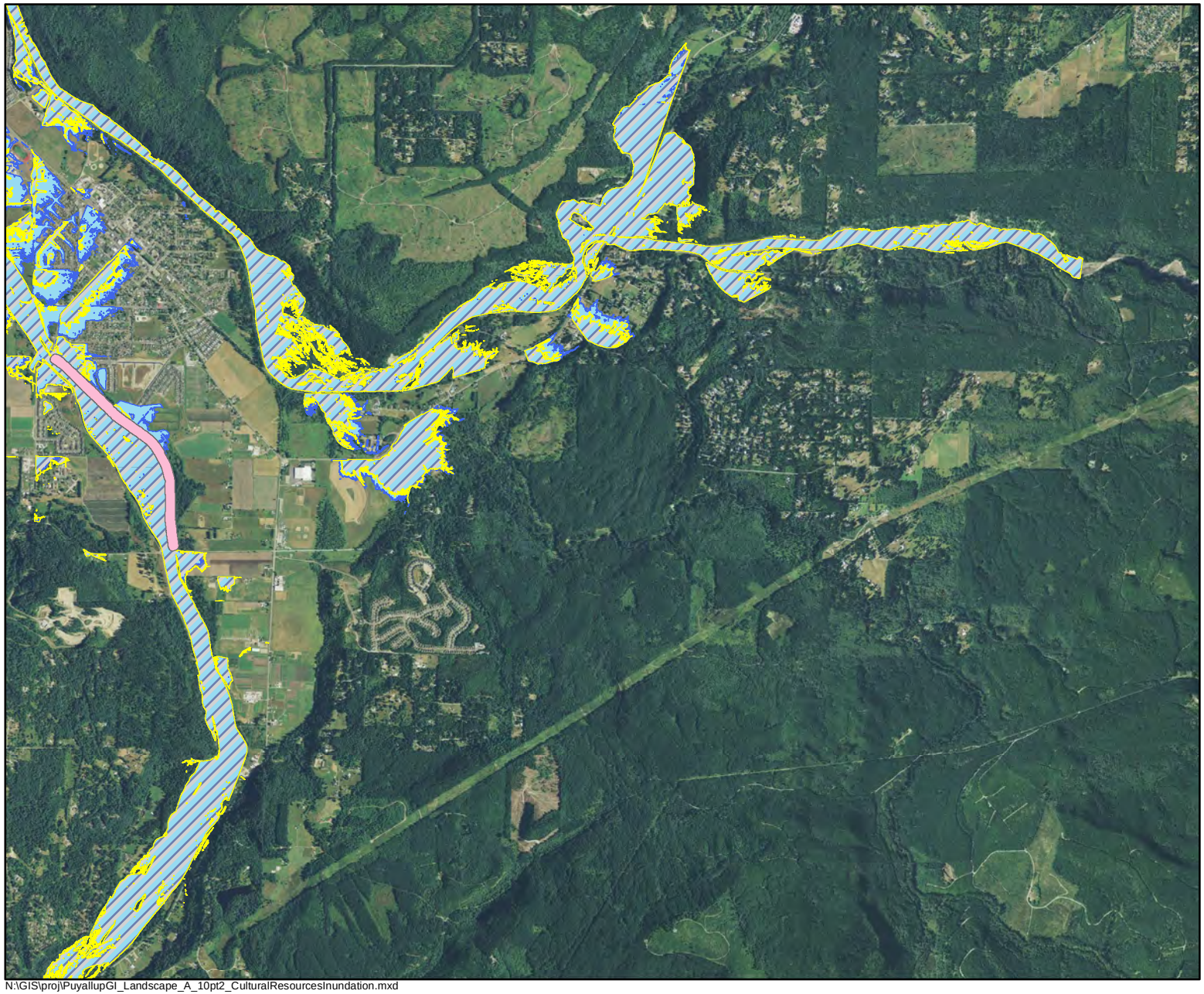
MAP 20

Puyallup General Investigation and Feasibility Study



Legend

Flood Inundation Comparison
Without and With Project
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- Levee Removal

APE - 100' Buffered Footprint

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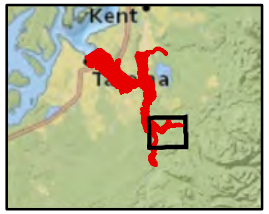
Location Map



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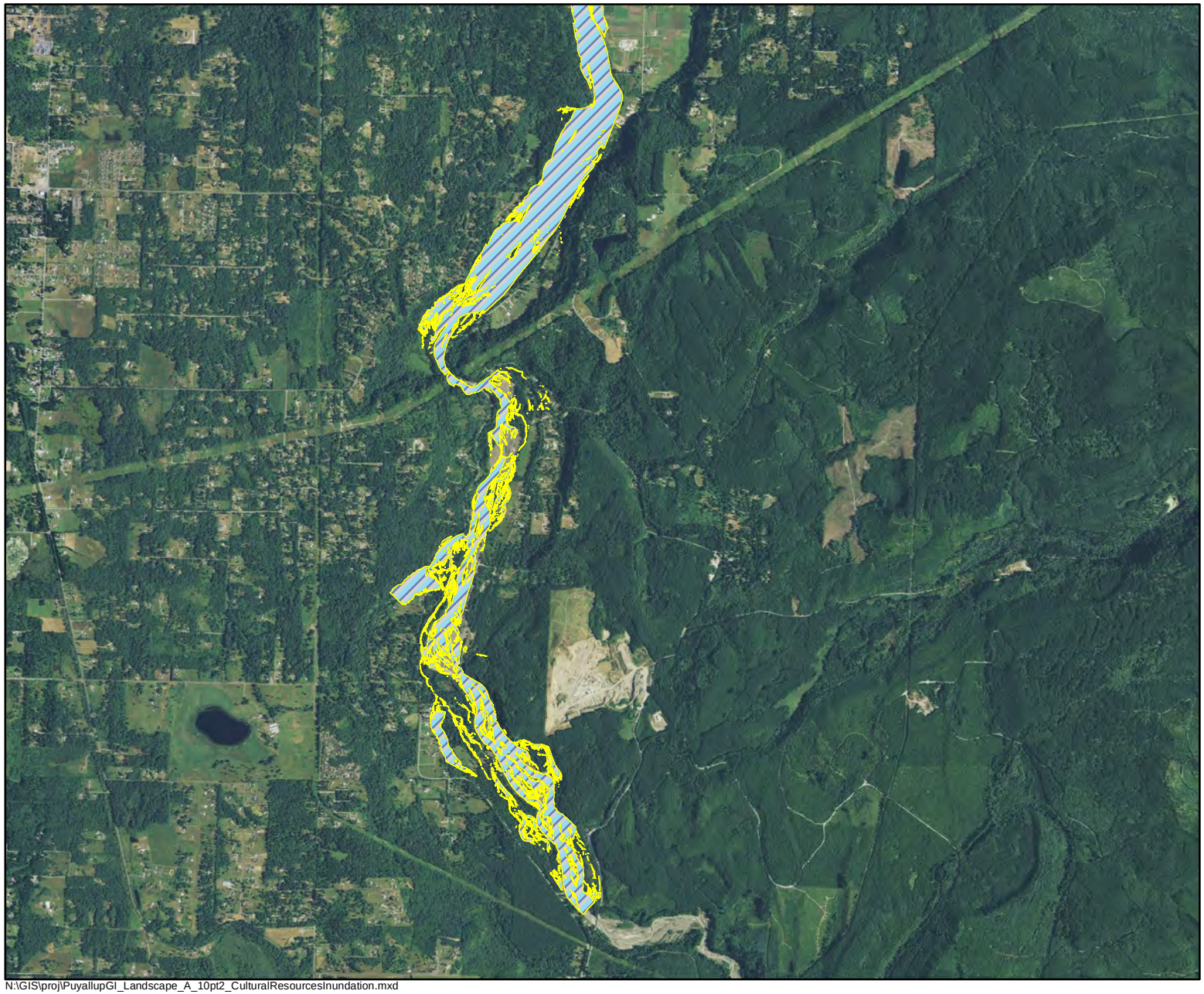
MAP 21

Puyallup General Investigation and Feasibility Study



Legend

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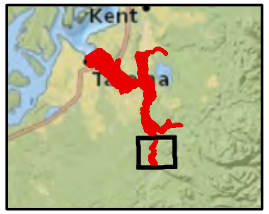
Location Map



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Nisqually Indian Tribe
4820 She-Nah-Num Dr. S.E.
Olympia, WA 98513
(360) 456-5221

February 10, 2016

Lori Morris
US Army Corps of Engineers
PO Box 3755
Seattle, WA

Dear Ms. Morris

The Nisqually Indian Tribe thanks you for the opportunity to comment on:

Re: Puyallup River Basin Flood-Risk Management General Investigation

The Nisqually Indian Tribe has reviewed the report you provided for the above-named project. The Nisqually Indian Tribe defers to the Puyallup Tribe.

Sincerely,

Jackie Wall
THPO
Nisqually Indian Tribe
(360)456-5221 Ext. 2180
wall.jackie@nisqually-nsn.gov

From: Adam Osbekoff
To: Queen, Rolla L NWS
Cc: Brandon Reynon
Subject: [EXTERNAL] Puyallup River Basin Flood Risk Management General Investigation
Date: Monday, February 15, 2016 11:16:11 AM

Mr. Queen

The Snoqualmie Indian Tribes Department of Archaeology and Historic Preservation defer to the Puyallup Tribe and support any decisions and/or requests made by the Puyallup Tribe regarding the above mentioned project.

Thank you for your time.

Adam

Adam Osbekoff

Cultural Resource Compliance Manager

adam@snoqualmietribe.us

P: 425.888.6551 ext. 2105

C: 425.753.0388

PO BOX 969

Snoqualmie Washington 98065

From: Stephanie Neil
To: Queen, Rolla L NWS
Subject: [EXTERNAL] Puyallup River Basin Flood Risk Management GI Study
Date: Wednesday, February 24, 2016 3:59:59 PM

Rolla,

Thank you for contacting the Squaxin Island Tribe Cultural Resources Department regarding the above listed project for our review and comment. I am responding to you on behalf of Rhonda Foster, THPO. Although the project is within our treaty and traditional area, we recommend you continue to consult with the Puyallup Tribe regarding cultural resource concerns for this project.

Thank You,

Stephanie Neil

Archaeologist, Squaxin Island Tribe

360-432-3998

360-972-6631

sneil@squaxin.us

Appendix G-4

Environmental and Cultural Resources

Table of Cultural Resources Surveys Located within the Puyallup Study Area, Extending into the APE for Alternatives 2 and 3

Puyallup River Basin

Flood Risk Management Feasibility Study

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REPORT AUTHOR	REPORT TITLE	Extends in Alt 2 100'APE	Extends in Alt 2 1320'APE	Extends in Alt 3 100'APE	Extends in Alt 3 1320'APE
	Cultural Resource Survey Report, D Street, Tacoma (10/1/2003)				
	March 2003 Addendum to: Negative Cultural Resources Survey Report Williams Northwest Pipeline White River Crossing Project (3/1/2003)				
	Puyallup Northwest Residental Survey (4/30/2010)		X		X
	Historic Resources Report Thea Foss Waterway Public Esplanade, East 13th Street to East 4th Street (10/1/2006)				
	Puyallup Historic Survey Report (8/1/2007)		X		X
Baldwin, Garth L.	Letter to Ross Widener RE: APE Addendum Area, Stewart Road Roadway Improvements Project, City of Pacific/City of Sumner (5/4/2012)				
Baldwin, Garth	Cultural Resources Assessment for the Proposed East Sumner Regional Stormwater Facilities Project (3/24/2014)				
Baldwin, Garth	Cultural Resources Assessment for the Proposed Pierce and Kitsap Counties YMCA Facility, Sumner (4/14/2014)				
Baldwin, Garth L.	Archaeological Assessment of Site 4, Thea Foss Waterway, Tacoma (7/4/2006)				
Baldwin, Garth	Cultural Resources Assessment for the Bridge Street Bridge Replacement Project, Sumner (7/25/2014)				
Bard, James C.	Tacoma Pierce County HOV Program I-5: Port of Tacoma Road to King County Line - HOVE Historic Cultural and Archaeological Resources Discipline Report (2/1/2009)				
Becker, Thomas E.	Results of an Archaeological Survey of the Petrich Marine Dock property, Tacoma (8/18/2006)				
Berger, Margaret	Cultural Resources Assessment for the Southwest Connector Project, Orting, Pierce County, Washington (3/23/2009)		X		
Berger, Margaret	Cultural Resources Assessment for the Murray Morgan Bridge Rehabilitation Project, Tacoma, Washington (6/1/2010)				
Berger, Margaret	Cultural Resources Survey for the White River Stormwater Treatment BMP Project (11/30/2009)	X	X		
Berger, Margaret	Cultural Resources Assessment for the West Valley Highway, Pacific Project (1/16/2015)				
Berger, Margaret	Letter to Jason Moline RE: Cultural Resources Assessment for the Pipeline No. 1 Replacement at Puyallup River Valley - Phase II (4/21/2009)				
Berger, Margaret	Cultural Resources Assessment for the Center for Urban Waters project, Tacoma (1/31/2008)				
Berger, Margaret	Cultural Resources Assessment for the Jerabek Plat Project, Parcels 0519297026 and 05197032 (9/10/2008)				
Berger, Margaret	Cultural Resources Assessment for the US Oil & Refining Co's TK 2002 Replacement, Biofuels Blending and Storage, and Asphalt Railcar Loading Projects, Tacoma (7/30/2007)				
Berger, Margaret	Amended Cultural Resources Assessment for the Washington Avenue Streetscape and Corridor Improvements (Calistoga Street to Bridge Street Project, Orting (9/11/2008)				
Berger, Margaret	Letter to Devin Wolf RE: Cultural Resources Assessment for the North End Reservoir and Booster Pump Station, Orting (3/20/2009)				
Berger, Margaret	Cultural Resources Assessment for the Tacoma Grinding Plant Project, 1220 Alexander Avenue, Tacoma (10/25/2006)				
Berger, Margaret	Cultural Resources Assessment for the Transfer Line Replacement Project, Tacoma (6/30/2007)				
Berger, Margaret	Letter to Chrissy Bailey RE: Cultural Resources Assessment for the Gratzer Park Project, Orting. Parcel 0519311113 and 0519304034 (3/17/2009)				
Berger, Margaret	Cultural Resources Assessment for the Suncap Freeman Road Project, Fife (3/17/2014)				
Berger, Margaret	Cultural Resources Assessment for the Clarks Creek Restoration Project (3/20/2014)				
Berger, Margaret	Cultural Resources Assessment for the Valley Avenue Bridge Repair Project, Puyallup (6/2/2014)				
Boersema, Jana L.	Cultural Resources Assessment for Storey Surface Mine, Tacoma (1/7/2008)				
Chambers, Jennifer	Phase 1: Cultural Resources Assessment for the Port of Tacoma's Lincoln Avenue Grade Separation Project (4/21/2006)				
Chambers, Jennifer	Letter to Ross Widener RE: Archaeological Monitoring for Lincoln Avenue Grade Separation Project (12/19/2006)				
Chambers, Jennifer	Cultural Resources Assessment for Thea Foss Waterway Site 1 Project (10/5/2006)				
Chambers, Jennifer	Cultural Resources Assessment for the Concrete Technology Corporation's New Hollow Core and Crane Project (7/20/2006)				
Chambers, Jennifer	Cultural Resources Assessment for the City of Fife's State Route (SR) 99 Pedestrian Improvements Project (10/21/2014)				

REPORT AUTHOR	REPORT TITLE	Extends in Alt 2 100'APE	Extends in Alt 2 1320'APE	Extends in Alt 3 100'APE	Extends in Alt 3 1320'APE
Chambers, Jennifer	Cultural Resources Assessment for the White River Pedestrian Trail Project, Sumner (11/10/2008)	X	X		
Chambers, Jennifer	Cultural Resource Assessment of the Pacific Interurban Trail Project, City of Pacific (5/9/2005)	X	X		
Chambers, Jennifer	Cultural Resources Assessment for the 1501 Taylor Way project, Tacoma (1/26/2007)				
Chatters, James C.	Letter to City of Tacoma Regarding Phase I Cultural Resources Assessment for ConocoPhillips's Tacoma Terminal Seawall Repair Project (6/2/2006)				
Chidley, Michael	An Intensive Phase I Archaeological Survey of the NEXTEL,WA0818-C Benroy Telecommunication Cell Tower Site (9/1/2005)				
Cole, Stephen C.	Cultural Resources Investigations for the Foothills Linear Park/Trail, McMillan to Meeker (CSM 6169) (9/18/2002)				
Compass, Lynn	Archaeological Monitoring Report for the I-5 HOV WSDOT Project, City of Tacoma, Pierce County, Washington (12/26/2012)				
Cooper, Jason B.	Archaeological Survey of the Proposed City of Fife Pacific Highway East Port of Tacoma Road to Alexander Avenue East Improvement Project (5/1/2005)				
Cooper, Jason	Cultural Resources Assessment for the Freemen Road Property and Inner Hylebos Property (12/22/2009)				
Cooper, Jason	Puyallup Tribal Terminal Cultural Resources Assessment (6/8/2009)				
Cowan, Jason	Cultural Resources Assessment for the Milwaukee Bridge Replacement Project, Puyallup (7/31/2013)	X	X	X	X
Dailide, Ashley	A Historic Properties Inventory for the Ford Levee Restoration Project (5/31/2013)	X	X		X
Dailide, Ashley	Historic Properties Inventory of Water Ski Levee Restoration (5/1/2010)				
Dailide, Ashley	Historic Properties Inventory of Jones (Calistoga) Levee Restoration (5/1/2010)	X	X		
Darby, Melissa	Cutlural Resources Assessment of the Levee Road, Fife Cellular Facility Proposed Lease Area Expansion (6/25/2014)		X		
Dellert, Jenny	FINAL-Archaeological Monitoring Report for the Targa Sound Terminal Renewable Fuels Project, City of Tacoma (2/15/2013)				
Dellert, Jenny	ADDENDUM to "Archaeological Monitoring and Cultural Resources Assessment for the B & L Woodwaste Site, Fife (12/4/2009)				
Dellert, Jenny	Final Cultural Resources Assessment for the West Valley Highway Improvement Project, City of Pacific (3/17/2014)				
Diedrich, Melanie	Archaeological Monitoring for Parcel 14, the East-West Road and Alexander Avenue, Tacoma (6/1/2012)				
Diveley, Brian	SR 520, 1-5 to Medina: Bridge Replacement and HOV Project; Archaeological Monitoring Report for Geotechnical and Environmental Testing at the Port of Olympia and Port of Tacoma, Washington (10/1/2010)				
Earley, Amber	Letter to Maggie Brothers RE: Cultural Resources NEPA Re-evaluation for the 70th Avenue East and Valley Avenue East Project, Fife (3/19/2008)				
Earley, Amber	Letter to Maggie Brothers RE: Cultural Resources NEPA Re-evaluation for the 70th Avenue East and Valley Avenue East Project, Fife (3/19/2008)				
Elder, J. Tait	Cultural Resources Survey Report Tacoma HOV Program - R Street Improvement Project (6/1/2012)		X		X
ELDER, TAIT	TACOMA/ PIERCE COUNTY HOV PROGRAM ARCHAEOLOGICAL DATA RECOVERY REPORT (7/1/2010)		X		X
Emerson, Stephen	Cultural Resources Survey for the Department of Fish and Wildlife Voight's Creek Hatchery Improvement Project (2/1/2008)				
Ferland, Sarah	Cultural Resources NEPA Re-Evaluation for the 70th Avenue East and Valley Avenue East Project, Fife, Washington (5/17/2010)				
Flenniken, J. Jeffrey	Cultural Resource Investigation of the Olympic Pipe Line Company Tacoma Junction Containment Project, Fife (4/1/2013)	X	X		X
Forsman, Leonard A.	RTA Lakewood-to-Tacoma Commuter Rail Project, Tacoma Dome, South Tacoma, and Lakewood Sections, Cultural Resource Assessment (6/19/1998)				
Forsman, Leonard A.	Letter to Lloyd Skinner Regarding Proposed RTA South Corridor Puyallup Burlington Northern Third Track Cultural Resource Management (3/23/1998)		X		X
Gillespie, Ann	Cultural Resources Assessment of 502 54th Avenue East and 503 53rd Avenue East, Fife (8/25/2008)				
Gillis, Nichole	Cultural Resources Assessment for the Puyallup Avenue Bridge Span Replacement Project, Pierce County, Washington (1/5/2011)	X	X	X	X
Gillis, Nichole	Cultural Resources Assessment for the Puyallup Avenue Bridge Span Replacement Project (10/27/2006)	X	X	X	X

REPORT AUTHOR	REPORT TITLE	Extends in Alt 2 100'APE	Extends in Alt 2 1320'APE	Extends in Alt 3 100'APE	Extends in Alt 3 1320'APE
Goodwin, Matt	Archaeological Survey for Proposed SC2040 Pacific Telecommunications Facility, Technical Memorandum (6/20/2014)				
Gross, G. Timothy	Letter Report Concerning: Cultural Resource Survey Report Addendum, White River Replacement Project (11/1/2002)				
Haney, Faith	Cultural Resources Inventory for the SRI Renewable Fuels Expansion Project, City of Tacoma (9/14/2011)				
Hartmann, Glenn	Letter to Charles "Ted" Hill RE: Cultural Resources Assessment for the White River Trail (Confluence to Bridge St.) Project, Sumner (6/21/2010)				
Hartmann, Glenn	Cultural Resources Assessment for the Stowe Construction Warehouse Development on Wapato Creek, Fife (5/25/2011)				
Hedlund, Gerald C.	Archaeological Survey of a Portion of a Proposed Biking and Hiking Trail Along the White-Stuck River in Sumner (8/1/2004)	X	X		X
Hess, Sean C.	Letter to Leslie Degner Regarding Negative Cultural Resources Survey Report-White River Crossing Project (2/23/2000)				
Hodges, Charles M.	Cultural Resources Investigation for the Panorama West LLC Development Project Bonney Lake (4/20/2004)				
Holschuh, Dana	Archaeological Survey of the Sumner DT (ATC# 281904) Telecommunications Facility (4/8/2014)				
Hoyt, Bryan	A Street-County Line Levee Modification Project Cultural Resources Assessment (7/1/2011)		X		
Hudson, Lorelea	Cultural/Archaeological Investigation for Simpson Tacoma Kraft Company Cogeneration Building (8/2/2006)				
Ives, Ryan	Cultural Resources Survey of the Washington Department of Fish and Wildlife's New Voights Creek Fish Hatchery Project (2/1/2012)				
Johnson, Paula	Cultural Resources Survey of the Nordlund Boat Compnay Proposed Rock Bulkhead Wall Project (9/1/2007)				
Jordan, Amy	Cultural Resources Survey Report Woodland Creek Mouth Restoration Project (D197-03) (6/1/2009)				
Kaehler, Gretchen	Sha Dadx Wetland Restoration Project Addendum (10/27/2006)	X	X		X
Kaehler, Gretchen	FINAL: Hylebos Waterway HDD Crossing Cultural Resources Assessment (2/1/2007)				
Kelly, Katherine	Leach Road Levee Restoration (10/11/2009)				
Kelly, Katherine M.	DRAFT: Cultural Resources Survey and Archaeological Monitoring Plan for the 2008 Larson Levee Rehabilitation Project, Puyallup River (6/2/2008)				
Kelly, Katherine	Letter to Steve Carstens RE: Cultural Resources Assessment for the Meeker Creek Channel Restoration Project, Puyallup (9/12/2012)				
Kelly, Katherine	Results of Archaeological Monitoring of the Side Sewer Pipeline Project, Tacoma (10/31/2012)				
Kelly, Katherine	Cultural Resources Assessment for the Private Side Sewer Pipeline, Tacoma (8/24/2012)				
Kelly, Katherine	Cultural Resources Assessment for the Puyallup River Floodplain/Fennel Creek Restoration Project, Sumner (7/30/2012)				
Kent, Ronald	Historic Properties Investigation for the Corp's Puyallup River Flood Control Project Levee Road Access Lease with the City of Fife (9/14/2006)		X		X
Kent, Ronald J.	Cultural Resources Survey for the Cancelled Orting Soldier's Home Setback Levee Ecosystem Restoration Project on the Puyallup River, Orting (9/13/2005)	X	X		
Kent, Ronald J.	Cultural Resources Survey for the 2007 Neadham Road PL 84-99 Levee Rehabilitation Project on the Puyallup River (10/2/2007)				
Kent, Ronald J.	Cultural Resources Survey for the 2007 Guy West Levee 84-99 Rehabilitation Project on the Carbon River (8/14/2007)				
Kent, Ronald	Historic Properties Investigation for the Corps' Puget Sound Energy Puyallup River Gas Pipeline Crossing Easement Renewal Cities of Tacoma and Fife (9/13/2006)	X	X	X	X
Kent, Ronald J.	Cultural Resources Reconnaissance Survey for the U.S. Army Corps of Engineers' Puyallup River Flood Control Project (12/6/2004)	X	X	X	X
Kent, Ronald J.	Cultural Resources Survey for the 2007 Alward and Water Ski Levees PL 84-99 Rehabilitation Projects on the Carbon River (8/17/2007)				
Kiers, Roger	Deep Archaeological Investigations, SR 162 Puyallup River Bridge Project (2/15/2013)				
Kiers, Roger	Cultural Resources Discipline Report, State Route 167 Puyallup River/ Meridian Street Bridge Phase, SR 167 Extension-Puyallup to SR 509 Freeway Construction Project, Pierce County, Washington (8/2/2012)	X	X	X	X

REPORT AUTHOR	REPORT TITLE	Extends in Alt 2 100'APE	Extends in Alt 2 1320'APE	Extends in Alt 3 100'APE	Extends in Alt 3 1320'APE
Kiers, Roger	Evaluation of Effects to the Puyallup River Flood Control Project Revetments, Tacoma/ Pierce County HOV Program (3/11/2013)	X	X	X	X
Kiers, Roger	Cultural Resources Survey, SR512, SR410 and SR167, Portland Ave to King County Line, Flow Map Improvements, Pierce County, Washington (4/20/2010)				
Lenz, Brett	Initial Cultural Resources Assessment for the Proposed Fennel Resources Project, McMillin (12/14/2007)				
Luttrell, Charles T.	Cultural Resources Investigation for the DR Horton Radiance Division 4 Project (3/1/2006)		X		X
Luttrell, Charles T.	Cultural Resources Investigations for the Washington State Department of Transportation's I-5: Pierce County Line to Tukwila Stage 4 HOV Project (7/1/2004)				
Luttrell, Charles T.	Cultural Resources Investigations for the City of Fife's 20th Street East Widening Project (7/1/2007)				
Luttrell, Charles T.	DISCIPLINE REPORT - Cultural Resource Investigations for the Washington State Department of Transportation's SR 167: Puyallup to SR 509 Project and Take Group 2 Project (5/1/2004)	X	X	X	X
Luttrell, Charles T.	Cultural Resources Investigations for Friends of the Hylebos' East Fork Hylebos Creek Channel Restoration Project (4/1/2005)				
Marken, Mitchell	DRAFT: Cultural Resources Survey for the Puyallup Sounder Commuter Rail Station Parking Expansion, Puyallup (4/1/2009)				
Mastrangelo, Liz	Archaeological Survey of the Orting North (TA3320) Telecommunications Facility Project Area (5/23/2014)				
Mather, Camille	Archaeological Assessment for the Valentine Avenue Corridor Improvement Project, Cities of Pacific and Sumner Washington (8/25/2011)		X		
McClintock, Robin	Northwest Pipeline GP Washington Expansion Project Cultural Resources Overview and Survey Report (6/1/2013)	X	X	X	X
McKenney, Pamela	Final Cultural Resources Survey for the WDFW's Voights Creek Fish Hatchery Project (1/1/2013)				
Merrill, Christie	Memo to Lauren Smith RE: Tacoma Trestle Replacement (8/20/2012)				
Miller, Heather Lee	Historic, Cultural, and Archaeological Discipline Report for the Hylebos Bridge Rehabilitation Project (5/22/2006)				
Moore, David	Historic Resources Survey (Update) of Naval and Marine Corps Reserve Center, Tacoma (11/1/2008)				
Mullaley, Meris	Cultural Resources Monitoring Report, Clear Creek Riverside Mitigation Monitoring Project, Pierce County, Washington (3/25/2011)	X	X	X	X
Parvey, Michele	Letter to Robert Brenner RE: Summary of 2006 Archaeological Monitoring Activities for the Blair Inner Reach Turning Basin Expansion Area and Southwest Corner Cutback (4/18/2007)				
Parvey, Michele	Letter to the Bruce McDonald Regarding Summary of 2007 Archaeological Monitoring Activities for the Gog-Le-Hi-Te II Mitigation Action Area (2/18/2008)		X		X
Parvey, Michele	Cultural Resources Assessment for the Port of Tacoma's Barge Slip Fill Project (9/16/2005)				
Parvey, Michele	Cultural Resources Assessment for the Port of Tacoma's Blair Waterway Infrastructure Improvements Project and Gog-Le-Hi-Te II Mitigation Action Plan (8/5/2005)		X		X
Parvey, Michele	Letter to Scott Bickel RE: Summary of Archaeological Monitoring Activities for the Port of Tacoma's Washington United Terminals Berth Extension Project (11/30/2010)				
Parvey, Michele	Letter to Maggie Buckley RE : Addendum to the Cultural Resources Assessment for the 70th Avenue East and Valley Avenue East Project, Fife, Washington (6/14/2011)				
Parvey, Michele	Cultural Resources Assessment for the Lilyblad Site Remediation Project (2/26/2009)				
Piper, Jessie	Cultural Resources Assessment for Sumner Waste Water Treatment Plant Phase 2 Expansion (9/20/2013)		X		X
Randolph, Joseph	Title of Report: Filbert Acres 2012 EQIP Project (DAHP Log No. 012813-03-NRCS) (2/5/2013)				
Randolph, Joseph	Melvin Moon 2008 EQIP Project, Test Report (11/5/2008)				
Randolph, Joseph	Summary of Cultural Resources Field Investigations for the 2013 Filbert Acres 2013 EQIP Project (11/12/2013)				
Rinck, Brandy	Preliminary Cultural Resources Assessment of the Upper Clear Creek Mitigation Property Habitat Restoration, Tacoma (2/21/2012)				X

REPORT AUTHOR	REPORT TITLE	Extends in Alt 2 100'APE	Extends in Alt 2 1320'APE	Extends in Alt 3 100'APE	Extends in Alt 3 1320'APE
Rooke, Lara C.	Cultural Resources Survey for the Washington State Department of Transportation's SR 167, North Sumner Interchange (1/24/2003)				
Rust, Thomas	Archaeological Assessment, Washington State University - Puyallup Research Center Stormwater Retrofit Project, Puyallup (7/14/2008)				
Rust, Thomas C.	Cultural Resources Report, Wildlands of Washington Hauff Property, Tacoma (11/14/2008)				
Schneyder, Stacy	Cultural Resources Inventory Report, Puyallup River Bridge Replacement Project (10/1/2009)				
Schultze, Carol	Addendum to Tacoma/Pierce County HOV Program Archaeological Assessment of Gas Line Replacement Alighnment to Support the HOV Project (10/9/2012)		X		X
Scott, Todd	Historic Agricultural Resources Survey and Inventory Enumclaw Plateau (8/1/2008)				
Shantry, Kate	Results of Testing at Xaxtl'abish 1 (45PI974), Hylebos Creek (6/2/2010)				
Sharpe, James	Tacoma/ Pierce County HOV Program I-5 M Street to Portland Avenue- HOV I-5: I-5 Portland Avenue to Port of Tacoma Road -Southbound HOV, I-5 Portland Avenue to Port of Tacoma Road- Nothbound HOV Historic, Cultural & Archaeological Resources Discipline Rprt (8/1/2009)	X	X	X	X
Shaw, Derek	Archaeological Monitoring and Cultural Resources Assessment for the B & L Woodwaste Site, Fife (3/1/2009)				
Shaw, Derek	Archaeological Monitoring and Cultural Resources Assessment for the B & L Woodwaste Site, Fife (3/1/2009)				
Shong, Michael V.	Letter to Sarah Whitley Bailiff Regarding Heritage Resource Assessment for Abandonment of a Railroad Line Between BNSF M.P. 28.10 and M.P. 28.34 Near McMillan (5/1/2003)				
Shong, Michael	Letter to Jim Dougherty RE: Results of Cultural Resources Monitoring for the Sumner Wastewater Treatment Plant Phase 2 Expansion (10/10/2014)		X		X
SHONG, MICHAEL	RESULTS OF ARCHAEOLOGICAL MONITORING FOR THE HYLEBOS BRIDGE REHABILITATION PROJECT, PIERCE COUNTY, WASHINGTON (5/27/2010)				
Shong, Michael V.	Heritage Resources Investigations for the City of Puyallup Riverfront Trail Project-Phase 3 (4/11/2003)	X	X	X	X
Shong, Michael V.	Heritage Resources Investigations for the City of Puyallup Riverfront Trail Project-Phase 2 (SR 512 to East Main) (4/14/2003)		X		X
Shong, Michael	Cultural Resources Assessment for the WSU LID Frontage Improvements Project (1/29/2014)				
Shong, Michael	Letter to Robert Brenner RE:Results of Archaeological Monitoring for the Port Parcel 88 Combined Habitat Project, Port of Tacoma (1/18/2012)				
Shufelt, Sarah	Final Draft: Cultural Resources Survey WSDOT Pierce County HOV Program Clear Creek Riverside Mitigation Site, Tacoma (9/1/2009)	X	X	X	X
Sikes, Nancy	Cultural Resources Assessment and Unanticipated Discovery Plan: Marine View Drive Project Tacoma (5/12/2010)				
Smith, J. Gregory	Cultural Resource Survey for the 26-Inch Pipeline Integrity Project: Priority Project Areas (1/13/2004)				
Solimano, Paul	Cultural Resources Assessment of the Proposed Puyallup Tribe of Indians Justice Center, Puyallup (5/19/2010)		X		X
Stevenson, Alexander	Cultural Resources Survey Report: Neadham Road Setback Levee Project (5/1/2011)				
Stevenson, Alexander	Cultural Resources Survey Report South Fork Road Floodplain Restoration Project and South Hill Pump Station Outfall (3/1/2012)				
Thompson, Gail	Letter Report Concerning: Second Addendum to Negative Cultural Resources Survey Report-White River Crossing Project (11/9/2000)				
Thompson, Gail	Letter to Kirt Rhoads Regarding Addendum to Negative Cultural Resources Survey Report-White River Crossing Project (7/10/2000)				
Trautman, Pam	Archaeological Monitoring of the Tacoma Rail Sound Refining Spur Track Project, 1601 Taylor Way, Tacoma, Pierce County, Washington (3/1/2011)				
Van Galder, Sarah	Cultural Resources Survey for the Calistoga Levee Setback Project in Orting (6/15/2010)				

REPORT AUTHOR	REPORT TITLE	Extends in Alt 2 100'APE	Extends in Alt 2 1320'APE	Extends in Alt 3 100'APE	Extends in Alt 3 1320'APE
Van Galder, Sarah	Federal Railroad Administration WSDOT Point Defiance Bypass Project Environmental Assessment, Section 106 Survey Report Historic, Cultural, and Archaeological Resources/ Discipline Report (9/1/2012)	X	X	X	X
Weaver, Robert	Letter to John O'Laughlin Regarding Puyallup River Side Channel Habitat Restoration Project Cultural Resource Section 106 Assessment (10/13/2003)		X		X
White, William A.	DRAFT: Archaeological Assessment of the Thea Foss Waterway Public Esplanade, East 13th Street to Thea's Park (8/21/2006)				

Appendix G-5

Environmental and Cultural Resources

Table of Cultural Resources Located within the Puyallup Study Area, the APE for Alternatives 2 and 3, and Inundation Areas for 1% ACE With and Without Project

Puyallup River Basin

Flood Risk Management Feasibility Study

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DAHP ID	Property Name	Property Address	WHR/NR Status	Alternative 2 100'APE	Alternative 2 1320' APE	Alternative 3 100' APE	Alternative 3 1320' APE	Inundataion w/o Project	Inundataion w Project	Real Estate Taking
HPI 28791		Hwy 162 at State Fish Hatchery, vicinity of South Prairie/Orting, WA	HPI Inventory Data					X	X	
HPI 28798		212 Bridge St, Orting, WA	HPI Inventory Data					X	X	
HPI 28805	Mazza Cheese Building	SW corner Corrin Ave and Calistoga Ave, Orting, WA	HPI Inventory Data					X		
HPI 28826		111 Van Scoyoc, Orting, WA	HPI Inventory Data					X		
HPI 28827		211 Van Scoyoc, Orting, WA	HPI Inventory Data					X		
HPI 28838		NW side Calistoga Ave S of Tacoma Ave, Orting, WA	HPI Inventory Data					X		
HPI 29544		2315 Pacific Hwy E, Fife, WA	HPI Inventory Data		X		X	X		
HPI 29545	Glacier Motel	3401 Pacific Hwy E, Fife, WA	HPI Inventory Data					X	X	
HPI 29548		4601 Pacific Hwy E, Fife, WA	HPI Inventory Data					X	X	
HPI 29567		6522 River Rd, Puyallup, WA	HPI Inventory Data		X			X	X	
HPI 29812	Clover Creek Grange #851	36th Ave E, vicinity of Frederickson, WA	HPI Inventory Data		X		X	X	X	
HPI 30062		168th St E, across from Rt 2, Box 2952, vicinity of Spanaway, WA	HPI Inventory Data					X	X	X
HPI 30111		E Pioneer Way, S of Puyallup River, vicinity of McMillan, WA	HPI Inventory Data					X	X	X
HPI 30119		168th St E, at 14th Ave E, vicinity of Orting, WA	HPI Inventory Data					X	X	X
HPI 30137		E McCutcheon Rd, S of 128th St E, vicinity of Sumner, WA	HPI Inventory Data					X	X	
HPI 30146	Kaelin and Kaelin Dairy	Rt 1, Box 95, vicinity of Orting, WA	HPI Inventory Data					X	X	
HPI 30147	Voights Creek State Fish Hatchery	N 162, E of Kapowsin Hwy, vicinity of Orting, WA	HPI Inventory Data					X	X	
HPI 30901		1543 Dock St, Tacoma, WA	HPI Inventory Data					X	X	
HPI 31048		1051 Milwaukee Waterway, Tacoma, WA	HPI Inventory Data					X		
HPI 31228	Reservation Switching Station	North of Puyallup River RR bridge, Tacoma, WA	HPI Inventory Data		X		X	X	X	
HPI 31257	Ball Brass Company	1113 E St. Paul Ave, Tacoma, WA	HPI Inventory Data					X		
HPI 31260		1135 St. Paul Ave, Tacoma, WA	HPI Inventory Data					X		
HPI 31261		1216 St. Paul Ave, Tacoma, WA	HPI Inventory Data					X	X	
HPI 31445	Buffelen Lumber and Manufacturing Company	1901 Taylor Way, Tacoma, WA	HPI Inventory Data					X	X	
HPI 31604	Engine Company No. 12	2316 E 11th St, Tacoma, WA	HPI Inventory Data					X		
HPI 31669	Chicago, Milwaukee, St. Paul & Pacific S Turn Trestle	- E 25th, between East K St and East G St , Tacoma, WA 98421	HPI Inventory Data					X	X	
HPI 31670	Washington Door and Panel Company	1001 E 25th St, Tacoma, WA	HPI Inventory Data					X		
HPI 31683	Tacoma Box Company	921 E 26th St, Tacoma, WA 98421	HPI Inventory Data					X	X	
HPI 31781	Burlington Northern Railroad at E 15th Street	E 15th St, Crossing Burlington Northern Railroad and Dock Street, Tacoma, WA	HPI Inventory Data					X	X	
HPI 31786	Puyallup River Bridge	Puyallup River crossing along Hwy 99 (also known as Puyallup Ave, Eells S), Tacoma, WA 98421	HPI Inventory Data		X	X	X	X	X	
HPI 31883	Carson Chestnut Tree	SR 167 at SR161, vicinity of Puyallup, WA	HPI Inventory Data		X		X	X	X	X

DAHP ID	Property Name	Property Address	WHR/NR Status	Alternative 2 100'APE	Alternative 2 1320' APE	Alternative 3 100' APE	Alternative 3 1320' APE	Inundataion w/o Project	Inundataion w Project	Real Estate Taking
HPI 31886		5423 8th St E, Fife, WA	HPI Inventory Data					X	X	
HPI 31898	George Hoertrich Electrical Shop	7222 20th St E, Fife, WA	HPI Inventory Data					X		
HPI 31911		7204 20th St E, Fife, WA	HPI Inventory Data					X		
HPI 31917		6411 48th St E, vicinity of Puyallup, WA	HPI Inventory Data		X					
HPI 31931		4902 66th Ave E, vicinity of Puyallup, WA	HPI Inventory Data		X					
HPI 31932		5603 66th Ave E, vicinity of Puyallup, WA	HPI Inventory Data					X	X	
HPI 31946		3620 74th Ave E, vicinity of Fife, WA	HPI Inventory Data					X		
HPI 31960	Firwood School Gymnasium	W side Freeman Rd E, S of Valley Rd, vicinity of Firwood, WA	HPI Inventory Data					X		
HPI 31968		E side Freeman Rd E, at 48th St E, vicinity of Puyallup, WA	HPI Inventory Data		X			X		
HPI 31969		5001 Freeman Rd E, vicinity of Puyallup, WA	HPI Inventory Data		X			X		
HPI 31970	Fort Malone Historical Marker	N Levee Rd, and Meridian St, Puyallup, WA	HPI Inventory Data	X	X		X	X		
HPI 31971	Riverside Valley Grange	N side Levee Rd, W of 70th Ave E, vicinity of Puyallup, WA	HPI Inventory Data	X	X			X	X	X
HPI 31972		N side Levee Rd, W of 70th Ave E, vicinity of Puyallup, WA	HPI Inventory Data		X			X		
HPI 31973	George Milroy Bridge	between 410 and Levee Rd , Puyallup, WA	HPI Inventory Data	X	X			X	X	
HPI 31974	Meridian Street Bridge	, Puyallup, WA	HPI Inventory Data		X		X	X	X	
HPI 32006		Pioneer Way E, and Stewart Ave, Puyallup, WA	HPI Inventory Data					X	X	X
HPI 32008	Poultry Research and Diagnostic Barn	Pioneer Way E, Puyallup, WA	HPI Inventory Data					X	X	X
HPI 32009	Dairy Barns	Pioneer Way E, Puyallup, WA	HPI Inventory Data					X	X	X
HPI 32010	Guest House	Pioneer Way E, Puyallup, WA	HPI Inventory Data					X	X	X
HPI 32023	Stuck River Bridge	0000 Bridge Street, Sumner, WA	HPI Inventory Data					X	X	
HPI 32037		2907 Valley Ave, vicinity of Sumner, WA	HPI Inventory Data					X	X	
HPI 32045	Firwood Store	8124 E Valley Ave, vicinity of Fife, WA	HPI Inventory Data					X		
HPI 32049	J. V. Mina Farms	902 Valley Rd, vicinity of Puyallup, WA	HPI Inventory Data					X		
HPI 32085		623 3rd St NE, Puyallup, WA	HPI Inventory Data		X		X			
HPI 32128		319 5th Ave NE, Puyallup, WA	HPI Inventory Data		X		X			
HPI 32144		504 5th St NE, Puyallup, WA	HPI Inventory Data		X		X			
HPI 32145		505 5th St NE, Puyallup, WA	HPI Inventory Data		X		X			
HPI 32178		1104 9th St NW, Puyallup, WA	HPI Inventory Data		X		X	X		
HPI 32216		1026 14th St SW, Puyallup, WA	HPI Inventory Data					X	X	
HPI 32217		1312 14th St SW, Puyallup, WA	HPI Inventory Data					X	X	
HPI 32228		2303 Inter Ave, Puyallup, WA	HPI Inventory Data					X	X	
HPI 32236		2303 E Main, Puyallup, WA	HPI Inventory Data					X	X	X
HPI 32337		N Tacoma Ave, Eastside, Sumner, WA	HPI Inventory Data		X		X			
HPI 32338		902 Thompson St, Sumner, WA	HPI Inventory Data		X		X			
HPI 32340		800 Traffic St, Sumner, WA	HPI Inventory Data		X		X	X		
HPI 32366		NE McKinnon Ave, and Thompson St, Sumner, WA	HPI Inventory Data		X		X	X		
HPI 32394		SE State St, and Spinning Ave, Sumner, WA	HPI Inventory Data		X		X			

DAHP ID	Property Name	Property Address	WHR/NR Status	Alternative 2 100'APE	Alternative 2 1320' APE	Alternative 3 100' APE	Alternative 3 1320' APE	Inundataion w/o Project	Inundataion w Project	Real Estate Taking
HPI 32646	Blair Waterway Bridge	Tacoma Tideflats spanning Blair Waterway, Tacoma, WA	HPI Inventory Data					X	X	
HPI 39724	Carson Chestnut Tree	SR167 at SR161, vicinity of Puyallup, WA 98424	HPI Inventory Data		X		X	X	X	X
HPI 39728	George Hoertrich Electrical Shop	7222 E 20th Street, Fife, WA 98424	HPI Inventory Data					X		
HPI 39729	Puyallup River/ Meridian Street Bridge	Meridian River Crossing Puyallup River , Puyallup, WA 98424	HPI Inventory Data		X		X	X	X	X
HPI 39730	Fort Malone Historical Marker (PC-96-15)	North Levee Road and Meridian St, Puyallup, WA 98424	HPI Inventory Data	X	X	X	X	X	X	X
HPI 39731	Firwood School Gymnasium	W side Freeman Road E., South of Valley Road, vicinity of Firwood, WA 98424	HPI Inventory Data					X		
HPI 39812		4105 N Levee Rd, Fife, WA	HPI Inventory Data		X		X	X	X	X
HPI 39814		3102 Frank Albert Rd, Fife, WA	HPI Inventory Data	X	X		X	X	X	X
HPI 39815		3206 Frank Albert Rd, Fife, WA	HPI Inventory Data	X	X		X	X	X	X
HPI 39833		3321 N Levee Rd, Fife, WA	HPI Inventory Data		X		X	X	X	X
HPI 39834		N Levee Rd, Fife, WA	HPI Inventory Data		X		X	X	X	X
HPI 48456		7204 20th St E, Tacoma, WA 98424-2214	HPI Inventory Data					X		
HPI 48459	Kaelin, Arnold and Pat House	4203 Freeman Rd E, Puyallup, WA 98371-2453	HPI Inventory Data					X		
HPI 48695		3405 54th Ave E, Fife, WA 98424	HPI Inventory Data		X		X	X		
HPI 48696		3421 54th Ave E, Fife, WA 98424	HPI Inventory Data		X		X	X		
HPI 48697		3515 54th Ave E, Fife, WA 98424	HPI Inventory Data		X		X	X		
HPI 49034		7204 20th St E, Fife, WA 98424-2214	HPI Inventory Data					X		
HPI 51552	1941 House of Tomorrow	4907 66th Ave E, Puyallup, WA 98371	HPI Inventory Data		X			X	X	
HPI 54809	Grayland Park	601 N Meridian, Puyallup, WA 98371	HPI Inventory Data					X		
HPI 54825		505 5th St NE, Puyallup, WA 98371	HPI Inventory Data		X		X			
HPI 54826		508 5th St NE, Puyallup, WA 98371	HPI Inventory Data		X		X			
HPI 54827		412 7th Ave NE, Puyallup, WA 98371	HPI Inventory Data		X		X			
HPI 54828		515 4th St NE, Puyallup, WA 98371	HPI Inventory Data		X		X			
HPI 54829	Trumbull Court Apartments	410 5th Ave NE, Puyallup, WA 98371	HPI Inventory Data		X		X			
HPI 55487	East 21st Street Bridge	E 21st St, Lincoln Avenue, Crosses Puyallup River, Tacoma, WA	HPI Inventory Data					X		
HPI 55489	Puyallup River Bridge	509 Hwy , Tacoma, WA	HPI Inventory Data	X	X	X	X	X	X	
HPI 85275	Hylebos Bridge	Tacoma, WA	HPI Inventory Data					X	X	
HPI 88816		503 53rd Ave E, Fife, WA WA	HPI Inventory Data					X	X	
HPI 88954	Barn	3604 40th Ave. E, Tacoma, WA 98443	HPI Inventory Data					X	X	
HPI 90179		5 57th Ave E, Tacoma, WA 98424	HPI Inventory Data					X	X	
HPI 90180		5 57th Ave E, Tacoma, WA 98424	HPI Inventory Data					X	X	
HPI 90181		5 57th Ave E, Tacoma, WA 98424	HPI Inventory Data					X	X	
HPI 90182		5 57th Ave E, Tacoma, WA 98424	HPI Inventory Data					X	X	
HPI 90499	East 21st Street (E Lincoln Ave) Bridge	E Lincoln Ave, Tacoma, WA 98421	HPI Inventory Data		X		X	X	X	
HPI 90583		3520 Pacific Hwy E, Fife, WA 98424	HPI Inventory Data					X		
HPI 90826	Naval Reserve Training Center - Bldg. 33	1100 Alexander Avenue, Tacoma, WA 98241-4198	HPI Inventory Data					X		

DAHP ID	Property Name	Property Address	WHR/NR Status	Alternative 2 100'APE	Alternative 2 1320' APE	Alternative 3 100' APE	Alternative 3 1320' APE	Inundataion w/o Project	Inundataion w Project	Real Estate Taking
HPI 91075		101 EASTGATE AVE S., Pacific	HPI Inventory Data		X					
HPI 91534		2335 Ross Way, Tacoma, WA 98421	HPI Inventory Data					X		
HPI 91535		2434 E 11th St, Tacoma, WA 98421	HPI Inventory Data					X		
HPI 97093		2208 Pacific Hwy E, Tacoma, WA	HPI Inventory Data		X		X	X		
HPI 97770	Milwaukee Railroad-Puyallup River Bridge	xxx Puyallup River RR Crossing , , Tacoma, WA 98401	HPI Inventory Data		X	X	X	X	X	
HPI 100903		4104 50th Ave E Tacoma	HPI Inventory Data					X	X	
HPI 102758		4914 62nd Ave E., Puyallup	HPI Inventory Data		X			X		
HPI 103837		6020 MILWAUKEE AVE E, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 103840		6113 MILWAUKEE AVE E, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 103841		6202 MILWAUKEE AVE, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 104152		18509 PIONEER WAY E, CROCKER, WA	HPI Inventory Data		X		X			
HPI 104210		XXX NORTH LEVEE RD, FIFE, WA 98424	HPI Inventory Data		X		X	X	X	X
HPI 104276		13608 VALLEY AVE, SUMNER, WA 98390	HPI Inventory Data					X	X	
HPI 104288		639 W MAIN ST, SUMNER, WA 98390	HPI Inventory Data					X	X	
HPI 104293		617 W MAIN ST, SUMNER, WA 98390	HPI Inventory Data					X	X	
HPI 104309		502 STATE ST, SUMNER, WA 98390	HPI Inventory Data		X		X			
HPI 104334		908 THOMPSON ST, SUMNER, WA	HPI Inventory Data		X		X			
HPI 104335		912 THOMPSON ST, SUMNER, WA	HPI Inventory Data		X		X			
HPI 104351		322 ALDER AVE, SUMNER, WA	HPI Inventory Data		X		X			
HPI 104353		306 ALDER AVE, SUMNER, WA	HPI Inventory Data		X		X			
HPI 104356		1024 WILLOW ST, SUMNER, WA	HPI Inventory Data		X		X			
HPI 104362		9509 RIVERSIDE RD E, SUMNER, WA	HPI Inventory Data					X	X	
HPI 104444		9509 RIVERSIDE RD E, SUMNER, WA	HPI Inventory Data					X	X	
HPI 104451		1121 PACIFIC AVE, SUMNER, WA	HPI Inventory Data					X	X	
HPI 104452		17212 159TH AVE E, ORTING, WA	HPI Inventory Data					X	X	X
HPI 104521		17414 150TH AVE E, ORTING, WA 98360	HPI Inventory Data						X	X
HPI 104529		210 ELDREDGE AVE NW, ORTING, WA	HPI Inventory Data					X		
HPI 104541		121 VAN SCOYOC AVE SW, ORTING, WA	HPI Inventory Data					X		
HPI 104548		306 CALISTOGA ST W, ORTING, WA	HPI Inventory Data					X	X	
HPI 104553		503 CALISTOGA ST W, ORTING, WA	HPI Inventory Data					X		
HPI 104559		607 KANSAS ST SW, ORTING, WA	HPI Inventory Data					X		
HPI 104561		801 CALISTOGA ST W, ORTING, WA	HPI Inventory Data		X			X	X	X
HPI 104562		508 KANSAS ST SW, ORTING, WA 98360	HPI Inventory Data					X		
HPI 109041	Washington Steel Products, Inc.	1940 E 11th St , Tacoma, WA 98401	HPI Inventory Data					X		
HPI 109053	B & M Distributing Company	2216 E 11th St , Tacoma, WA 98401	HPI Inventory Data					X		
HPI 109055		1125 Thorne Rd , Tacoma, WA 98401	HPI Inventory Data					X		
HPI 109263		1160 Thorne Rd , Tacoma, WA 98401	HPI Inventory Data					X		
HPI 109268		XXX Milwaukee WY , Tacoma, WA 98401	HPI Inventory Data					X		
HPI 112164	A Street-County Line Levee	5827 A St SE, Auburn, WA 98047	HPI Inventory Data		X			X	X	
HPI 121451		7902 146TH AVE E, WA	HPI Inventory Data		X		X			
HPI 121460		14901 80TH ST E, WA	HPI Inventory Data		X		X			
HPI 122891		7905 146TH AVE E, WA	HPI Inventory Data		X		X			
HPI 123343		7815 142ND AVE E, WA	HPI Inventory Data		X		X			

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HPI 123548		7607 142ND AVE E, WA	HPI Inventory Data		X		X			
HPI 123697		14819 80TH ST E, WA	HPI Inventory Data		X		X			
HPI 123888		14915 80TH ST E, WA	HPI Inventory Data		X		X			
HPI 124017		12825 HOUSTON RD, WA	HPI Inventory Data					X	X	
HPI 124126		7916 146TH AVE E, WA	HPI Inventory Data		X		X			
HPI 124395		14715 80TH ST E, WA	HPI Inventory Data		X		X			
HPI 124568		7717 142ND AVE E, WA	HPI Inventory Data		X		X			
HPI 125019		14803 80TH AVE E, WA	HPI Inventory Data		X		X			
HPI 125540		14907 80TH ST E, WA	HPI Inventory Data		X		X			
HPI 125746	7307 56th St E_PUYALLUP WA_98371	7307 56 St E, Puyallup, WA 98371	HPI Inventory Data		X			X		
HPI 126520		540 E D ST, WA	HPI Inventory Data					X	X	
HPI 126523		401 E 15TH ST, WA	HPI Inventory Data					X	X	
HPI 126532		1448 PAUL AVE, WA	HPI Inventory Data					X	X	
HPI 126990	Wallowa, Theodore Foss	WA	HPI Inventory Data					X	X	
HPI 127259		1219 15TH ST NW, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 127509		414 8TH AVE NE, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 127511		1109 WILLOW ST, SUMNER, WA	HPI Inventory Data		X		X			
HPI 127521		513 5TH ST NE, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 127751		430 HARRISON ST, SUMNER, WA	HPI Inventory Data		X		X			
HPI 127776		5625 PACIFIC HWY E, FIFE, WA	HPI Inventory Data					X	X	
HPI 127777		5703 PACIFIC HWY E, FIFE, WA	HPI Inventory Data					X		
HPI 127801		1045 VALENTINE AVE, PACIFIC, WA	HPI Inventory Data		X					
HPI 127803		409 136TH AVE E, PACIFIC, WA	HPI Inventory Data		X					
HPI 127804		926 VALENTINE AVE, PACIFIC, WA	HPI Inventory Data		X					
HPI 127805		239 NYBERG ST SE, PACIFIC, WA	HPI Inventory Data		X					
HPI 127806		784 VALENTINE AVE SE, PACIFIC, WA	HPI Inventory Data		X					
HPI 127808		1366 THORNTON AVE SW, PACIFIC, WA	HPI Inventory Data					X		
HPI 127809		1436 THORNTON AVE, PACIFIC, WA 98047	HPI Inventory Data					X		
HPI 127810		942 VALENTINE AVE, PACIFIC, WA 98047	HPI Inventory Data		X					
HPI 127811		1015 VALENTINE AVE, PACIFIC, WA	HPI Inventory Data		X					
HPI 127812		255 NYBERG ST, PACIFIC, WA	HPI Inventory Data		X					
HPI 127853		1709 137TH AVE E, SUMNER, WA	HPI Inventory Data		X					
HPI 127854		1725 137TH AVE E, SUMNER, WA	HPI Inventory Data		X					
HPI 127857		228 MT CIRCLE DR, SUMNER, WA	HPI Inventory Data		X		X	X		
HPI 127864		732 VALENTINE AVE SE, PACIFIC, WA	HPI Inventory Data		X					
HPI 127878		224 54TH AVE E, FIFE, WA	HPI Inventory Data					X	X	
HPI 127879		2107 INTER AVE, PUYALLUP, WA	HPI Inventory Data					X	X	X
HPI 127883		1075 VALENTINE AVE, PACIFIC, WA	HPI Inventory Data		X					
HPI 127898		1441 132ND AVE E, PACIFIC, WA	HPI Inventory Data					X		
HPI 127902		2306 EAST VALLEY HWY E, SUMNER, WA	HPI Inventory Data					X	X	X
HPI 127912		832 138TH AVE E, PACIFIC, WA	HPI Inventory Data		X			X	X	X
HPI 127924		14017 16TH ST E, SUMNER, WA	HPI Inventory Data	X	X					
HPI 127932		1557 VALENTINE AVE E, PACIFIC, WA	HPI Inventory Data		X					

DAHP ID	Property Name	Property Address	WHR/NR Status	Alternative 2 100'APE	Alternative 2 1320' APE	Alternative 3 100' APE	Alternative 3 1320' APE	Inundataion w/o Project	Inundataion w Project	Real Estate Taking
HPI 127955		755 136TH AVE E, PACIFIC, WA	HPI Inventory Data		X					
HPI 127956		759 136TH AVE E, PACIFIC, WA	HPI Inventory Data		X					
HPI 127983		519 136TH AVE E, PACIFIC, WA	HPI Inventory Data		X					
HPI 127984		703 VALENTINE AVE, PACIFIC, WA	HPI Inventory Data		X					
HPI 127985		1574 THORNTON AVE SW, PACIFIC, WA	HPI Inventory Data					X		
HPI 127986		1590 THORNTON AVE SW, PACIFIC, WA	HPI Inventory Data					X		
HPI 127987		245 NYBERG RD SW, PACIFIC, WA	HPI Inventory Data					X		
HPI 127992		13702 8TH ST E, SUMNER, WA	HPI Inventory Data		X					
HPI 128005		14001 16TH ST E, SUMNER, WA	HPI Inventory Data	X	X					
HPI 128053		1716 W PIONEER, PUYALLUP, WA	HPI Inventory Data					X		
HPI 128062		305 18TH ST SW, PUYALLUP, WA	HPI Inventory Data					X	X	
HPI 128063		315 18TH ST SW, PUYALLUP, WA	HPI Inventory Data					X	X	
HPI 128099		323 ALDER AVE, SUMNER, WA	HPI Inventory Data		X		X			
HPI 128113		302 SUMNER AVE, SUMNER, WA	HPI Inventory Data		X		X			
HPI 128158		505 KINCAID AVE, SUMNER, WA	HPI Inventory Data		X		X			
HPI 128165		310 ALDER AVE, SUMNER, WA	HPI Inventory Data		X		X			
HPI 128227		201 ELDREDGE AVE SW, ORTING, WA	HPI Inventory Data					X		
HPI 128255		1132 14TH ST SW, PUYALLUP, WA	HPI Inventory Data					X	X	
HPI 128300		706 HARRISON ST, SUMNER, WA	HPI Inventory Data		X		X			
HPI 128329		802 18TH ST SW, PUYALLUP, WA	HPI Inventory Data					X	X	
HPI 128361		1316 15TH ST NW, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 128421		603 KANSAS HOUSE ST, ORTING, WA	HPI Inventory Data					X		
HPI 128428		426 8TH AVE NE, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 128498		1234 14TH ST SW, PUYALLUP, WA	HPI Inventory Data					X	X	
HPI 128584		417 HARRISON ST, SUMNER, WA	HPI Inventory Data		X		X			
HPI 128628		510 STATE ST, SUMNER, WA	HPI Inventory Data		X		X			
HPI 128711		5417 15TH ST E, FIFE, WA	HPI Inventory Data					X	X	
HPI 128856		409 5TH AVE NE, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 128895		320 18TH ST SW, PUYALLUP, WA	HPI Inventory Data					X		
HPI 128917		119 CORRIN AVE SW, ORTING, WA	HPI Inventory Data					X		
HPI 129080		204 MT CIRCLE DR, SUMNER, WA	HPI Inventory Data		X		X	X		
HPI 129094		112 ELDREDGE AVE SW, ORTING, WA 98360	HPI Inventory Data					X		
HPI 129152		915 9TH AVE NW, PUYALLUP, WA	HPI Inventory Data					X		
HPI 129223		1210 14TH ST SW, PUYALLUP, WA	HPI Inventory Data					X	X	
HPI 129238		221 CORRIN AVE NW, ORTING, WA	HPI Inventory Data					X		
HPI 129284		719 18TH ST SW, PUYALLUP, WA	HPI Inventory Data					X	X	
HPI 129476		108 ELDREDGE AVE SW, ORTING, WA 98360	HPI Inventory Data					X		
HPI 129515		409 9TH AVE NE, PUYALLUP, WA	HPI Inventory Data		X		X	X		
HPI 129541		144 MT CIRCLE DR, SUMNER, WA	HPI Inventory Data		X		X	X		
HPI 129571		318 18TH ST SW, PUYALLUP, WA	HPI Inventory Data					X	X	
HPI 129581		620 MC KINNON AVE, SUMNER, WA	HPI Inventory Data		X		X			
HPI 129606		13708 COUNTY LINE RD E, PACIFIC, WA	HPI Inventory Data		X			X	X	X

DAHP ID	Property Name	Property Address	WHR/NR Status	Alternative 2 100'APE	Alternative 2 1320' APE	Alternative 3 100' APE	Alternative 3 1320' APE	Inundataion w/o Project	Inundataion w Project	Real Estate Taking
HPI 129607		316 SUMNER AVE, SUMNER, WA	HPI Inventory Data				X			
HPI 129714		1002 14TH ST SW, PUYALLUP, WA	HPI Inventory Data					X	X	
HPI 129730		919 WILLOW ST, SUMNER, WA	HPI Inventory Data		X		X			
HPI 129801		1515 13TH AVE NW, PUYALLUP, WA 98371	HPI Inventory Data		X		X			
HPI 129894		1022 RIVER RD, PUYALLUP, WA	HPI Inventory Data		X		X	X		
HPI 129897		916 16TH ST SW, PUYALLUP, WA	HPI Inventory Data					X	X	
HPI 129904		14009 16TH ST E, SUMNER, WA	HPI Inventory Data	X	X					
HPI 129923		1375 132ND AVE E, PACIFIC, WA	HPI Inventory Data					X		
HPI 129951		720 18TH ST SW, PUYALLUP, WA	HPI Inventory Data					X	X	
HPI 130075		445 HARRISON ST, SUMNER, WA	HPI Inventory Data		X		X			
HPI 130128		1416 WILLOW ST, FIFE, WA	HPI Inventory Data					X	X	
HPI 130184		1395 132ND AVE E, PACIFIC, WA	HPI Inventory Data					X		
HPI 130200		1824-1826 PIONEER AVE W, PUYALLUP, WA	HPI Inventory Data					X	X	
HPI 130224		614 MC KINNON AVE, SUMNER, WA	HPI Inventory Data		X		X			
HPI 130246		415 9TH AVE NE, PUYALLUP, WA	HPI Inventory Data		X		X	X		
HPI 130272		1011 11TH ST NW, PUYALLUP, WA	HPI Inventory Data		X		X	X		
HPI 130298		1312 9TH AVE SW, PUYALLUP, WA	HPI Inventory Data					X	X	
HPI 130316	4603 44th ST E, Tacoma	4603 44TH E, Tacoma, WA 98443	HPI Inventory Data					X	X	X
HPI 130359		611 5TH ST NE, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 130363		407 7TH AVE NE, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 130385		1327 9TH AVE SW, PUYALLUP, WA	HPI Inventory Data					X	X	
HPI 130397		618 MC KINNON AVE, SUMNER, WA	HPI Inventory Data		X		X			
HPI 130472		507 HARRISON ST, SUMNER, WA	HPI Inventory Data		X		X			
HPI 130508		805 3RD ST NE, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 130537		5615 15TH ST E, FIFE, WA	HPI Inventory Data					X	X	
HPI 130546		1428 47TH AVE E, FIFE, WA	HPI Inventory Data					X	X	
HPI 130556		514 KINCAID AVE, SUMNER, WA	HPI Inventory Data		X		X	X		
HPI 130564		5913 15TH ST E, FIFE, WA	HPI Inventory Data					X	X	
HPI 130573		501 HARRISON ST, SUMNER, WA	HPI Inventory Data		X		X			
HPI 130581		509 KINCAID AVE, SUMNER, WA	HPI Inventory Data		X		X			
HPI 130593		223 ALDER AVE, SUMNER, WA	HPI Inventory Data		X		X			
HPI 130621		424 9TH AVE NE, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 130623		1114 MAYBELL ST, SUMNER, WA	HPI Inventory Data		X		X	X		
HPI 130710		532 5TH ST NE, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 130766		415 HARRISON ST, SUMNER, WA	HPI Inventory Data		X		X			
HPI 130831		744 BUTTE AVE SE, PACIFIC, WA	HPI Inventory Data		X			X	X	X
HPI 130838		801 9TH AVE NW, PUYALLUP, WA	HPI Inventory Data		X		X	X		
HPI 130888		414 7TH AVE NE, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 130907		724 5TH ST NE, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 130908		443 HARRISON ST, SUMNER, WA	HPI Inventory Data		X		X			
HPI 130934		204 MT CIRCLE DR, SUMNER, WA	HPI Inventory Data		X		X	X		
HPI 130946		707 5TH ST NE, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 130953		432 8TH AVE NE, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 130956		1130 14TH ST SW, PUYALLUP, WA	HPI Inventory Data					X	X	

DAHP ID	Property Name	Property Address	WHR/NR Status	Alternative 2 100'APE	Alternative 2 1320' APE	Alternative 3 100' APE	Alternative 3 1320' APE	Inundataion w/o Project	Inundataion w Project	Real Estate Taking
HPI 131022		1216 18TH ST NW, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 131038		2 COURT PL, PUYALLUP, WA	HPI Inventory Data	X	X	X	X	X		
HPI 131039		417 10TH AVCT NE, PUYALLUP, WA	HPI Inventory Data	X	X	X	X	X		
HPI 131040		410 10TH AVCT NE, PUYALLUP, WA	HPI Inventory Data		X		X	X		
HPI 131134		617 MC KINNON AVE, SUMNER, WA	HPI Inventory Data		X		X			
HPI 131192		713 5TH ST NE, PUYALLUP, WA	HPI Inventory Data		X		X	X	X	X
HPI 131251		528 5TH ST NE, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 131290		1111 MAYBELL ST, SUMNER, WA	HPI Inventory Data		X		X	X		
HPI 131344		5912 15TH ST E, FIFE, WA	HPI Inventory Data					X	X	
HPI 131364		425 9TH AVE NE, PUYALLUP, WA	HPI Inventory Data		X		X	X		
HPI 131368		409 HARRISON ST, SUMNER, WA	HPI Inventory Data		X		X			
HPI 131370		1712 W PIONEER, PUYALLUP, WA	HPI Inventory Data					X		
HPI 131452		426 7TH AVE NE, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 131488	Laycock Parcel	719 5TH NE, PUYALLUP, WA 98372	HPI Inventory Data		X		X	X	X	X
HPI 131629		5518 15TH ST E, FIFE, WA	HPI Inventory Data					X	X	
HPI 131632		430 CHERRY AVE, SUMNER, WA	HPI Inventory Data		X		X	X		
HPI 131676		3401 12TH ST E, FIFE, WA	HPI Inventory Data					X	X	
HPI 131704		920 RIVER RD, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 131721		434 4TH ST NE, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 131722		222 CORRIN AVE NW, ORTING, WA	HPI Inventory Data					X		
HPI 131753		1212 MAYBELL ST, SUMNER, WA	HPI Inventory Data		X		X			
HPI 131792		514 5TH ST NE, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 131911		711 5TH ST NE, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 132011		517 BRIDGE AVE NE, PUYALLUP, WA	HPI Inventory Data		X		X		X	X
HPI 132031		519 4TH ST NE, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 132037		1207 MAYBELL ST, SUMNER, WA	HPI Inventory Data		X		X	X		
HPI 132040		309 ALDER AVE, SUMNER, WA	HPI Inventory Data		X		X			
HPI 132123		407 ALDER AVE, SUMNER, WA	HPI Inventory Data		X		X			
HPI 132162		429 HARRISON ST, SUMNER, WA	HPI Inventory Data		X		X			
HPI 132253		706 4TH ST NE, PUYALLUP, WA	HPI Inventory Data		X		X	X		
HPI 132281		216 WHITESELL ST NW, ORTING, WA	HPI Inventory Data					X		
HPI 132352		930 14TH ST SW, PUYALLUP, WA	HPI Inventory Data					X	X	
HPI 132384		885 136TH AVE E, PACIFIC, WA	HPI Inventory Data		X					
HPI 132466		5809 15TH ST E, FIFE, WA	HPI Inventory Data					X	X	
HPI 132503		416 5TH AVE NE, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 132541		1812 13TH AVE NW, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 132570		217 CORRIN AVE NW, ORTING, WA	HPI Inventory Data					X		
HPI 132662		222 ELDREDGE AVE NW, ORTING, WA	HPI Inventory Data					X		
HPI 132712		1204 MAYBELL ST, SUMNER, WA	HPI Inventory Data		X		X	X		
HPI 132723		418 5TH AVE NE, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 132786		422 8TH AVE NE, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 132867		608 DEEDED LN SW, ORTING, WA	HPI Inventory Data					X	X	
HPI 132905		809 CHESTNUT ST, SUMNER, WA	HPI Inventory Data		X		X	X		
HPI 132912		1520 13TH AVE NW, PUYALLUP, WA	HPI Inventory Data		X		X			

DAHP ID	Property Name	Property Address	WHR/NR Status	Alternative 2 100'APE	Alternative 2 1320' APE	Alternative 3 100' APE	Alternative 3 1320' APE	Inundataion w/o Project	Inundataion w Project	Real Estate Taking
HPI 132925		1230 14TH ST SW, PUYALLUP, WA	HPI Inventory Data					X	X	
HPI 132973		802 4TH ST NE, PUYALLUP, WA	HPI Inventory Data		X		X	X		
HPI 133003		5030 79TH AVCT E, FIFE, WA	HPI Inventory Data		X					
HPI 133004		5019 80TH AVCT E, FIFE, WA	HPI Inventory Data		X					
HPI 133005		5026 80TH AVCT E, FIFE, WA	HPI Inventory Data		X					
HPI 133072		320 HARRISON ST, SUMNER, WA	HPI Inventory Data		X					
HPI 133080		417 8TH AVE NE, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 133258		1309A-1309B 10TH AVE NW, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 133308		1112 WILLOWS ST, SUMNER, WA	HPI Inventory Data		X		X			
HPI 133349		805 CHESTNUT ST, SUMNER, WA	HPI Inventory Data		X		X	X		
HPI 133399		314 18TH ST SW, PUYALLUP, WA	HPI Inventory Data					X	X	
HPI 133403		1201 15TH ST NW, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 133457		431 CHERRY AVE, SUMNER, WA	HPI Inventory Data		X		X	X		
HPI 133466		606 HUNT AVE, SUMNER, WA	HPI Inventory Data		X		X			
HPI 133497		5002A 79TH AVCT E, FIFE, WA	HPI Inventory Data		X					
HPI 133505		1508 59TH AVCT E, FIFE, WA	HPI Inventory Data					X	X	
HPI 133519		908 WILLOW ST, SUMNER, WA	HPI Inventory Data		X		X			
HPI 133625		227 MT CIRCLE DR, SUMNER, WA	HPI Inventory Data		X		X	X		
HPI 133665		503 KINCAID AVE, SUMNER, WA	HPI Inventory Data		X		X			
HPI 133666		806 4TH ST NE, PUYALLUP, WA	HPI Inventory Data		X		X	X		
HPI 133681		210 CALISTOGA ST W, ORTING, WA	HPI Inventory Data					X		
HPI 133683		115 CORRIN AVE SW, ORTING, WA	HPI Inventory Data					X		
HPI 133751		420 5TH AVE NE, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 133756		715 4TH ST NE, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 133782		723 18TH ST SW, PUYALLUP, WA	HPI Inventory Data					X	X	
HPI 133943		408 9TH AVE NE, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 134033		604 HUNT AVE, SUMNER, WA	HPI Inventory Data		X		X			
HPI 134230		319 9TH AVE NE, PUYALLUP, WA	HPI Inventory Data		X		X	X		
HPI 134231		1319 9TH AVE SW, PUYALLUP, WA	HPI Inventory Data					X	X	
HPI 134232		233 MT CIRCLE DR, SUMNER, WA	HPI Inventory Data		X		X	X		
HPI 134293		601 KANSAS ST SW, ORTING, WA	HPI Inventory Data					X		
HPI 134381		510 HARRISON ST, SUMNER, WA	HPI Inventory Data		X		X			
HPI 134386		102 136TH AVE E, PACIFIC, WA	HPI Inventory Data		X					
HPI 134400		1102 15TH ST NW, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 134427		3517 12TH ST E, FIFE, WA	HPI Inventory Data					X	X	
HPI 134485		429 8TH AVE NE, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 134486		428 ALDER AVE, SUMNER, WA	HPI Inventory Data		X		X			
HPI 134493		410 9TH AVE NE, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 134523		1417 MEEKER ST, FIFE, WA	HPI Inventory Data					X	X	
HPI 134605		612 18TH ST SW, PUYALLUP, WA	HPI Inventory Data					X	X	
HPI 134626		13222 63RD ST E, SUMNER, WA	HPI Inventory Data		X		X			
HPI 134634		1218 14TH ST SW, PUYALLUP, WA	HPI Inventory Data					X	X	
HPI 134738		1113 12TH AVE NW, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 134791		1215 MAYBELL ST, SUMNER, WA	HPI Inventory Data		X		X	X		

DAHP ID	Property Name	Property Address	WHR/NR Status	Alternative 2 100'APE	Alternative 2 1320' APE	Alternative 3 100' APE	Alternative 3 1320' APE	Inundataion w/o Project	Inundataion w Project	Real Estate Taking
HPI 134975		111 TACOMA AVE SW, ORTING, WA	HPI Inventory Data					X	X	
HPI 134983		406 CALISTOGA ST W, ORTING, WA	HPI Inventory Data					X	X	
HPI 134999		1234 VALENTINE AVE SE, PACIFIC, WA	HPI Inventory Data		X					
HPI 135022		520 KINCAID AVE, SUMNER, WA	HPI Inventory Data		X		X			
HPI 135140		808 14TH ST SW, PUYALLUP, WA	HPI Inventory Data					X	X	
HPI 135214		702 HARRISON ST, SUMNER, WA	HPI Inventory Data		X		X			
HPI 135241		413 COURT PL, PUYALLUP, WA	HPI Inventory Data	X	X	X	X	X		
HPI 135242		421 10TH AVE NE, PUYALLUP, WA	HPI Inventory Data	X	X	X	X	X		
HPI 135270		420 ALDER AVE, SUMNER, WA	HPI Inventory Data		X		X			
HPI 135271		424 ALDER AVE, SUMNER, WA	HPI Inventory Data		X		X			
HPI 135417		927 WILLOW ST, SUMNER, WA	HPI Inventory Data		X		X			
HPI 135427		1003 WILLOW ST, SUMNER, WA	HPI Inventory Data		X		X			
HPI 135590		603 DEEDED LN SW, ORTING, WA	HPI Inventory Data					X	X	
HPI 135600		902 WILLOW ST, SUMNER, WA	HPI Inventory Data		X		X			
HPI 135618		424 7TH AVE NE, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 135658		1420 47TH AVE E, FIFE, WA	HPI Inventory Data					X		
HPI 135872		439 HARRISON ST, SUMNER, WA	HPI Inventory Data		X		X			
HPI 135890		919 9TH AVE NW, PUYALLUP, WA	HPI Inventory Data		X		X	X		
HPI 135916		1008 9TH AVE NW, PUYALLUP, WA	HPI Inventory Data					X		
HPI 135931		419 7TH AVE NE, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 136008		313 CHERRY AVE, SUMNER, WA	HPI Inventory Data		X		X			
HPI 136009		506 SNYDER LN, SUMNER, WA	HPI Inventory Data		X		X			
HPI 136052		144 CHRISTINA DR, SUMNER, WA	HPI Inventory Data		X		X	X		
HPI 136067		703 4TH ST NE, PUYALLUP, WA	HPI Inventory Data		X		X	X		
HPI 136068		1107 ADELE ST, SUMNER, WA	HPI Inventory Data		X		X			
HPI 136073		327 ALDER AVE, SUMNER, WA 98390-1319	HPI Inventory Data		X		X			
HPI 136188		812 13TH ST SW, PUYALLUP, WA	HPI Inventory Data					X	X	
HPI 136241		5905 15TH ST E, FIFE, WA	HPI Inventory Data					X	X	
HPI 136285		708 HARRISON ST, SUMNER, WA	HPI Inventory Data		X		X			
HPI 136398		318 CALISTOGA ST W, ORTING, WA	HPI Inventory Data					X	X	
HPI 136409		214 MT CIRCLE DR, SUMNER, WA	HPI Inventory Data		X		X	X		
HPI 136416		810 4TH ST NE, PUYALLUP, WA	HPI Inventory Data		X		X	X		
HPI 136451		403 5TH AVE NE, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 136519		920 WILLOW ST, SUMNER, WA	HPI Inventory Data		X		X			
HPI 136600		701 5TH ST NE, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 136634		426 9TH AVE NE, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 136661		1208 MAYBELL ST, SUMNER, WA	HPI Inventory Data		X		X	X		
HPI 136738		712 4TH ST NE, PUYALLUP, WA	HPI Inventory Data		X		X	X		
HPI 136751		435 HARRISON ST, SUMNER, WA	HPI Inventory Data		X		X			
HPI 136762		702 4TH ST NE, PUYALLUP, WA	HPI Inventory Data		X		X	X		
HPI 136773		511 KINCAID AVE, SUMNER, WA	HPI Inventory Data		X		X			
HPI 136802		426 STATE ST, SUMNER, WA	HPI Inventory Data		X		X			
HPI 136875		809 4TH ST NE, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 136916		14117 70TH ST E, SUMNER, WA	HPI Inventory Data		X		X	X		

DAHP ID	Property Name	Property Address	WHR/NR Status	Alternative 2 100'APE	Alternative 2 1320' APE	Alternative 3 100' APE	Alternative 3 1320' APE	Inundataion w/o Project	Inundataion w Project	Real Estate Taking
HPI 136943		814 14TH ST SW, PUYALLUP, WA 98371-5752	HPI Inventory Data					X	X	
HPI 137015		215 MT CIRCLE DR, SUMNER, WA	HPI Inventory Data		X		X	X		
HPI 137088		723 CHESTNUT ST, SUMNER, WA	HPI Inventory Data		X		X	X		
HPI 137126		423 8TH AVE NE, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 137142		409 10TH AVCT NE, PUYALLUP, WA	HPI Inventory Data		X		X	X		
HPI 137242		825 18TH ST SW, PUYALLUP, WA	HPI Inventory Data					X	X	
HPI 137265		101 TACOMA AVE SW, ORTING, WA	HPI Inventory Data					X	X	
HPI 137267		13806 16TH ST E, SUMNER, WA	HPI Inventory Data		X					
HPI 137288		442 STATE ST, SUMNER, WA	HPI Inventory Data		X		X			
HPI 137305		136 CHRISTINA DR, SUMNER, WA	HPI Inventory Data		X		X			
HPI 137308		714 4TH ST NE, PUYALLUP, WA	HPI Inventory Data		X		X	X		
HPI 137311		423 7TH AVE NE, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 137356		912 9TH ST NW, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 137412		416 ALDER AVE, SUMNER, WA	HPI Inventory Data		X		X			
HPI 137415		803 4TH ST NE, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 137473		129 CHRISTINA DR, SUMNER, WA	HPI Inventory Data		X		X	X		
HPI 137476		1412 14TH ST SW, PUYALLUP, WA	HPI Inventory Data					X	X	
HPI 137521		917 9TH ST NW, PUYALLUP, WA	HPI Inventory Data		X		X	X		
HPI 137534		14015 70TH ST E, SUMNER, WA	HPI Inventory Data		X		X			
HPI 137546		1322 WILLOWS RD E, FIFE, WA	HPI Inventory Data					X	X	
HPI 137555		429 7TH AVE NE, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 137615		5701 15TH ST E, FIFE, WA	HPI Inventory Data					X	X	
HPI 137638		1019 14TH ST SW, PUYALLUP, WA	HPI Inventory Data					X	X	
HPI 137656		102 TACOMA AVE SW, ORTING, WA	HPI Inventory Data					X	X	
HPI 137711		916 4TH ST NE, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 137744		914 RAINIER ST, SUMNER, WA	HPI Inventory Data		X		X			
HPI 137785		1103 ADELE ST, SUMNER, WA	HPI Inventory Data		X		X			
HPI 137797		1817 PIONEER, PUYALLUP, WA	HPI Inventory Data					X	X	
HPI 137858		703 CHESTNUT ST, SUMNER, WA	HPI Inventory Data		X		X	X		
HPI 137864		811 14TH ST SW, PUYALLUP, WA	HPI Inventory Data					X	X	
HPI 137896		1519 10TH AVE SW, PUYALLUP, WA	HPI Inventory Data					X	X	
HPI 137967		813 4TH ST NE, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 138049		911 9TH AVE NW, PUYALLUP, WA	HPI Inventory Data		X		X	X		
HPI 138123		516 KINCAID AVE, SUMNER, WA	HPI Inventory Data		X		X			
HPI 138155		714 18TH ST SW, PUYALLUP, WA	HPI Inventory Data					X	X	
HPI 138169		1128 14TH ST SW, PUYALLUP, WA	HPI Inventory Data					X	X	
HPI 138183		915 RAINIER ST, SUMNER, WA	HPI Inventory Data		X		X	X		
HPI 138206		1604 13TH AVE NW, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 138222		149 MT CIRCLE DR, SUMNER, WA	HPI Inventory Data		X		X	X		
HPI 138224		606 4TH ST NE, PUYALLUP, WA	HPI Inventory Data		X		X	X		
HPI 138332		407 18TH ST SW, PUYALLUP, WA	HPI Inventory Data					X		
HPI 138351		112 TACOMA AVE SW, ORTING, WA	HPI Inventory Data					X	X	
HPI 138452		4016 47TH AVE E, WALLER, WA	HPI Inventory Data					X	X	X

DAHP ID	Property Name	Property Address	WHR/NR Status	Alternative 2 100'APE	Alternative 2 1320' APE	Alternative 3 100' APE	Alternative 3 1320' APE	Inundataion w/o Project	Inundataion w Project	Real Estate Taking
HPI 138492		715 3RD ST NE, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 138602		507 CHERRY AVE, SUMNER, WA	HPI Inventory Data		X		X			
HPI 138625		119 MT CIRCLE DR, SUMNER, WA	HPI Inventory Data		X		X	X		
HPI 138648		168 CHRISTINA DR, SUMNER, WA	HPI Inventory Data		X		X	X		
HPI 138678		523 5TH ST NE, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 138746		406 ALDER AVE, SUMNER, WA	HPI Inventory Data		X		X			
HPI 138799		921 18TH ST SW, PUYALLUP, WA	HPI Inventory Data					X	X	
HPI 138800		132 MT CIRCLE DR, SUMNER, WA	HPI Inventory Data		X		X	X		
HPI 138806		603 4TH ST NE, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 138833		913 9TH ST NW, PUYALLUP, WA	HPI Inventory Data		X		X	X		
HPI 138842		435 CHERRY AVE, SUMNER, WA	HPI Inventory Data		X		X	X		
HPI 138939		411 CHERRY AVE, SUMNER, WA	HPI Inventory Data		X		X	X		
HPI 139036		5509 15TH ST E, FIFE, WA	HPI Inventory Data					X	X	
HPI 139128		806 CHESTNUT ST, SUMNER, WA	HPI Inventory Data		X		X	X		
HPI 139234		401 HARRISON ST, SUMNER, WA	HPI Inventory Data		X		X			
HPI 139325		1514 13TH ST NW, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 139383		912 4TH ST NE, PUYALLUP, WA	HPI Inventory Data		X		X	X		
HPI 139522		922 RAINIER ST, SUMNER, WA	HPI Inventory Data		X		X			
HPI 139523		1023 15TH ST NW, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 139547		1113 MAYBELL ST, SUMNER, WA	HPI Inventory Data		X		X	X		
HPI 139690		120 CHRISTINA DR, SUMNER, WA	HPI Inventory Data		X		X	X		
HPI 139878		417 7TH AVE NE, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 139898		5712 15TH ST E, FIFE, WA	HPI Inventory Data					X	X	
HPI 139948		508 SNYDER LN, SUMNER, WA	HPI Inventory Data		X		X			
HPI 139982		904-906 9TH ST NW, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 140011		923 16TH ST SW, PUYALLUP, WA	HPI Inventory Data					X	X	
HPI 140025		418 KINCAID AVE, SUMNER, WA	HPI Inventory Data		X		X	X		
HPI 140122		4015 47TH AVE E, WALLER, WA	HPI Inventory Data					X	X	X
HPI 140211		1201 20TH ST NW, PUYALLUP, WA	HPI Inventory Data					X		
HPI 140246		131 MT CIRCLE DR, SUMNER, WA	HPI Inventory Data		X		X	X		
HPI 140377		1108 WILLOW ST, SUMNER, WA	HPI Inventory Data		X		X			
HPI 140422		1502 13TH AVE NW, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 140558		125 MT CIRCLE DR, SUMNER, WA	HPI Inventory Data		X		X	X		
HPI 140621		414 18TH ST SW, PUYALLUP, WA	HPI Inventory Data					X		
HPI 140665		312 SUMNER AVE, SUMNER, WA	HPI Inventory Data		X		X			
HPI 140682		916 13TH ST SW, PUYALLUP, WA	HPI Inventory Data					X		
HPI 140714		412 KINCAID AVE, SUMNER, WA	HPI Inventory Data		X		X	X		
HPI 140748		905 4TH ST NE, PUYALLUP, WA	HPI Inventory Data		X		X	X		
HPI 140770		321 CHERRY AVE, SUMNER, WA	HPI Inventory Data		X		X			
HPI 140787		202 ALDER ST, SUMNER, WA	HPI Inventory Data		X		X	X		
HPI 140873		1009 14TH ST NW, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 140906		1104 11TH ST NW, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 140983		800 13TH ST SW, PUYALLUP, WA	HPI Inventory Data					X	X	
HPI 141084		424 KINCAID AVE, SUMNER, WA	HPI Inventory Data		X		X	X		

DAHP ID	Property Name	Property Address	WHR/NR Status	Alternative 2 100'APE	Alternative 2 1320' APE	Alternative 3 100' APE	Alternative 3 1320' APE	Inundataion w/o Project	Inundataion w Project	Real Estate Taking
HPI 141121		813 CHESTNUT ST, SUMNER, WA	HPI Inventory Data		X		X	X		
HPI 141149		420 SNYDER LN, SUMNER, WA	HPI Inventory Data		X		X			
HPI 141164		1814 W PIONEER, PUYALLUP, WA	HPI Inventory Data					X	X	
HPI 141182		403 ALDER AVE, SUMNER, WA 98390	HPI Inventory Data		X		X			
HPI 141268		112 CHRISTINA DR, SUMNER, WA	HPI Inventory Data		X		X	X		
HPI 141287		210 CORRIN AVE NW, ORTING, WA	HPI Inventory Data					X		
HPI 141301		145 MT CIRCLE DR, SUMNER, WA	HPI Inventory Data		X		X	X		
HPI 141326		1411 47TH AVE E, FIFE, WA	HPI Inventory Data					X	X	
HPI 141513		405 5TH AVE NE, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 141575		815 3RD ST NE, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 141614		719 CHESTNUT ST, SUMNER, WA	HPI Inventory Data		X		X	X		
HPI 141696		160 CHRISTINA DR, SUMNER, WA	HPI Inventory Data		X		X	X		
HPI 141709		714 HARRISON ST, SUMNER, WA	HPI Inventory Data		X		X			
HPI 141860		1010 WILLOW ST, SUMNER, WA	HPI Inventory Data		X		X			
HPI 141879		418 8TH AVE NE, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 141906		1015 RIVER RD, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 142150		410 ALDER AVE, SUMNER, WA	HPI Inventory Data		X		X			
HPI 142156		401 STATE ST, SUMNER, WA	HPI Inventory Data					X	X	
HPI 142229		417 ALDER AVE, SUMNER, WA	HPI Inventory Data		X		X			
HPI 142238		530 5TH ST NE, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 142274		716 18TH ST SW, PUYALLUP, WA	HPI Inventory Data					X	X	
HPI 142277		906 14TH ST SW, PUYALLUP, WA	HPI Inventory Data					X	X	
HPI 142318		602 DEEDED LN SW, ORTING, WA	HPI Inventory Data					X		
HPI 142385		430 STATE ST, SUMNER, WA	HPI Inventory Data		X		X			
HPI 142468		816 4TH AVE NE, PUYALLUP, WA	HPI Inventory Data		X		X	X		
HPI 142491		1203 WILLOW ST, SUMNER, WA	HPI Inventory Data		X		X			
HPI 142631		218 MT CIRCLE DR, SUMNER, WA	HPI Inventory Data		X		X	X		
HPI 142638		1311 18TH ST NW, PUYALLUP, WA	HPI Inventory Data		X		X	X		
HPI 142703	4219 47th AVE E, Tacoma	4219 47TH AVE E, Tacoma, WA 98443	HPI Inventory Data					X	X	X
HPI 142797		152 CHRISTINA DR, SUMNER, WA	HPI Inventory Data		X		X	X		
HPI 142852		316 9TH AVE NE, PUYALLUP, WA	HPI Inventory Data		X		X	X		
HPI 142927		1714 6TH AVE SW, PUYALLUP, WA	HPI Inventory Data					X		
HPI 142959		419 ALDER AVE, SUMNER, WA	HPI Inventory Data				X			
HPI 142969		5503 15TH ST E, FIFE, WA	HPI Inventory Data					X	X	
HPI 143091		137 CHRISTINA DR, SUMNER, WA	HPI Inventory Data		X		X	X		
HPI 143138		1829 W PIONEER, PUYALLUP, WA	HPI Inventory Data					X	X	
HPI 143233		704 5TH ST NE, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 143250		606 18TH ST SW, PUYALLUP, WA	HPI Inventory Data					X		
HPI 143596		1528 13TH AVE, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 143653		911 11TH ST NW, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 143671		224 ALDER AVE, SUMNER, WA	HPI Inventory Data		X		X			
HPI 143672		4704 15TH ST E, FIFE, WA	HPI Inventory Data					X	X	
HPI 143720		1002 WILLOW ST, SUMNER, WA	HPI Inventory Data		X		X			
HPI 143746		1220 9TH AVE SW, PUYALLUP, WA	HPI Inventory Data					X		

DAHP ID	Property Name	Property Address	WHR/NR Status	Alternative 2 100'APE	Alternative 2 1320' APE	Alternative 3 100' APE	Alternative 3 1320' APE	Inundataion w/o Project	Inundataion w Project	Real Estate Taking
HPI 143808		512 5TH ST NE, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 143810		919 18TH ST SW, PUYALLUP, WA	HPI Inventory Data					X	X	
HPI 143894		432 ALDER AVE, SUMNER, WA	HPI Inventory Data		X		X			
HPI 144031		404 7TH AVE NE, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 144074		1922 5TH AVE SW, PUYALLUP, WA	HPI Inventory Data					X	X	
HPI 144090		5718 15TH ST E, FIFE, WA	HPI Inventory Data					X	X	
HPI 144114		1105 11TH ST NW, PUYALLUP, WA	HPI Inventory Data		X		X	X		
HPI 144121		1305 9TH AVE SW, PUYALLUP, WA	HPI Inventory Data					X	X	
HPI 144235		1113 WILLOW ST, SUMNER, WA	HPI Inventory Data		X		X			
HPI 144279		609 18TH ST SW, PUYALLUP, WA	HPI Inventory Data					X	X	
HPI 144305		1724 13TH AVCT NW, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 144325		1003 9TH ST NW, PUYALLUP, WA	HPI Inventory Data		X		X	X		
HPI 144491		1203 15TH ST NW, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 144551		1410 WILLOWS RD E, FIFE, WA	HPI Inventory Data					X	X	
HPI 144694		434 CHERRY AVE, SUMNER, WA	HPI Inventory Data		X		X	X		
HPI 144802		708 THOMPSON ST, SUMNER, WA	HPI Inventory Data		X		X			
HPI 144836		1104 14TH ST SW, PUYALLUP, WA	HPI Inventory Data					X	X	
HPI 144857		513 4TH ST NE, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 144898		815 9TH AVE NW, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 144913		4003 47TH AVE E, WALLER, WA	HPI Inventory Data					X	X	X
HPI 144923	McDowell Parcel	717 5TH NE, PUYALLUP, WA 98372	HPI Inventory Data		X		X	X	X	X
HPI 145002		110 TACOMA AVE SW, ORTING, WA	HPI Inventory Data					X	X	
HPI 145082		1024 14TH ST NW, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 145233		1807 W PIONEER, PUYALLUP, WA	HPI Inventory Data					X	X	
HPI 145280		421 5TH AVE NE, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 145337		408 8TH AVE NE, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 145439		1021 14TH ST NW, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 145599		1311 9TH AVE SW, PUYALLUP, WA	HPI Inventory Data					X	X	
HPI 145714		205 ALDER AVE, SUMNER, WA	HPI Inventory Data		X		X	X		
HPI 145715		610 4TH ST NE, PUYALLUP, WA	HPI Inventory Data		X		X	X		
HPI 145762		924 9TH ST NW, PUYALLUP, WA	HPI Inventory Data		X		X	X		
HPI 145853		903-905 RAINIER ST, SUMNER, WA	HPI Inventory Data		X		X	X		
HPI 145906		917-915 11TH ST NW, PUYALLUP, WA	HPI Inventory Data		X		X	X		
HPI 145979		5801 15TH ST E, FIFE, WA	HPI Inventory Data					X	X	
HPI 145995		502 HARRISON ST, SUMNER, WA	HPI Inventory Data		X		X			
HPI 146027		612 HUNT AVE, SUMNER, WA	HPI Inventory Data		X		X			
HPI 146310		438 ALDER AVE, SUMNER, WA	HPI Inventory Data		X		X			
HPI 146329	4002 47th AVE E, Tacoma	4002 47TH E, Tacoma, WA 98443	HPI Inventory Data					X	X	X
HPI 146412		506 HARRISON ST, SUMNER, WA	HPI Inventory Data		X		X			
HPI 146517		210 MOUNTAIN DR E, SUMNER, WA	HPI Inventory Data		X		X	X		
HPI 146621		1220 18TH ST NW, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 146665		423 CHERRY AVE, SUMNER, WA	HPI Inventory Data		X		X	X		
HPI 146688		719 3RD ST NE, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 146819		417 CHERRY AVE, SUMNER, WA	HPI Inventory Data		X		X	X		

DAHP ID	Property Name	Property Address	WHR/NR Status	Alternative 2 100'APE	Alternative 2 1320' APE	Alternative 3 100' APE	Alternative 3 1320' APE	Inundataion w/o Project	Inundataion w Project	Real Estate Taking
HPI 146874		5510 E 15TH ST, FIFE, WA	HPI Inventory Data					X	X	
HPI 146911		809 3RD ST NE, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 146932		803 3RD ST NE, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 146947		5TH AVE NE, PUYALLUP, WA 98372	HPI Inventory Data		X		X			
HPI 147021		1016 14TH ST NW, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 147297		507 DEEDED LN SW, ORTING, WA	HPI Inventory Data					X		
HPI 147351		4909 44TH ST E, WALLER, WA	HPI Inventory Data					X	X	X
HPI 147361		912 14TH ST SW, PUYALLUP, WA	HPI Inventory Data					X	X	
HPI 147386		427-429 4TH ST NE, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 147398		1015 14TH ST NW, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 147420		326 ALDER AVE, SUMNER, WA	HPI Inventory Data		X		X			
HPI 147503		613 3RD ST NE, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 147591		711 CHESTNUT ST, SUMNER, WA	HPI Inventory Data		X		X	X		
HPI 147937		918 11TH ST NW, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 147940		1322 15TH ST NW, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 147958		436 4TH ST NE, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 147959		421 5TH ST NE, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 147999		515 KINCAID AVE, SUMNER, WA	HPI Inventory Data		X		X			
HPI 148067		605 KANSAS ST SW, ORTING, WA	HPI Inventory Data					X		
HPI 148202		1618 13TH AVE NW, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 148240		611 MC KINNON, SUMNER, WA	HPI Inventory Data		X		X			
HPI 148418		903 4TH ST NE, PUYALLUP, WA	HPI Inventory Data		X		X	X		
HPI 148444		507 KINCAID AVE, SUMNER, WA	HPI Inventory Data		X		X			
HPI 148671		615 5TH ST NE, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 148722		419 5TH ST NE, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 148864		1411 10TH AVE SW, PUYALLUP, WA	HPI Inventory Data					X	X	
HPI 148969		812 CHESTNUT ST, SUMNER, WA	HPI Inventory Data		X		X	X		
HPI 149010		1918 5TH AVE SW, PUYALLUP, WA	HPI Inventory Data					X	X	
HPI 149100		808 THOMPSON ST, SUMNER, WA 98390-1037	HPI Inventory Data		X		X			
HPI 149249		720 THOMPSON ST, SUMNER, WA	HPI Inventory Data		X		X			
HPI 149292		614 18TH ST SW, PUYALLUP, WA	HPI Inventory Data					X	X	
HPI 149332		1374 THORNTON AVE SW, PACIFIC, WA	HPI Inventory Data					X		
HPI 149340		425 8TH AVE NE, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 149366		1811 W PIONEER, PUYALLUP, WA	HPI Inventory Data					X	X	
HPI 149407		121 CORRIN AVE SW, ORTING, WA	HPI Inventory Data					X		
HPI 149610		1305 10TH AVE NW, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 149683		1114 12TH AVE NW, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 149854		1820 W PIONEER, PUYALLUP, WA	HPI Inventory Data					X	X	
HPI 149967		4303 E 47TH AVE, WALLER, WA	HPI Inventory Data					X	X	X
HPI 150116		504 CHERRY AVE, SUMNER, WA	HPI Inventory Data		X		X	X		
HPI 150298		1612 13TH AVE NW, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 150349		714 HUNT AVE, SUMNER, WA	HPI Inventory Data		X		X			
HPI 150397		1011 WILLOW ST, SUMNER, WA	HPI Inventory Data		X		X			

DAHP ID	Property Name	Property Address	WHR/NR Status	Alternative 2 100'APE	Alternative 2 1320' APE	Alternative 3 100' APE	Alternative 3 1320' APE	Inundataion w/o Project	Inundataion w Project	Real Estate Taking
HPI 150406		1002 11TH ST NW, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 150415		425 HARRISON ST, SUMNER, WA	HPI Inventory Data		X		X			
HPI 150472		410 18TH ST SW, PUYALLUP, WA	HPI Inventory Data					X	X	
HPI 150571		927 9TH ST NW, PUYALLUP, WA	HPI Inventory Data		X		X	X		
HPI 150629		1728 13TH AVCT NW, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 150737		407 8TH AVE NE, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 150756		1220 15TH ST NW, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 150998		1928 5TH AVE SW, PUYALLUP, WA	HPI Inventory Data					X	X	
HPI 151249		415 ALDER AVE, SUMNER, WA	HPI Inventory Data		X		X			
HPI 151261		1202 15TH ST NW, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 151301		220 ALDER AVE, SUMNER, WA	HPI Inventory Data		X		X			
HPI 151382		603 18TH ST SW, PUYALLUP, WA	HPI Inventory Data					X	X	
HPI 151443		128 CHRISTINA DR, SUMNER, WA	HPI Inventory Data		X		X	X		
HPI 151558		203 MT CIRCLE DR, SUMNER, WA	HPI Inventory Data		X		X	X		
HPI 151583		923 18TH ST SW, PUYALLUP, WA	HPI Inventory Data					X	X	
HPI 151668		415 5TH AVE NE, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 151703		1134 14TH ST SW, PUYALLUP, WA	HPI Inventory Data					X	X	
HPI 151706		316 CHERRY AVE, SUMNER, WA	HPI Inventory Data		X		X	X		
HPI 151717		5704 15TH ST E, FIFE, WA	HPI Inventory Data					X	X	
HPI 151767		1108 15TH ST NW, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 151884		143 CHRISTINA DR, SUMNER, WA	HPI Inventory Data		X		X	X		
HPI 152005		5719 15TH ST E, FIFE, WA	HPI Inventory Data					X	X	
HPI 152104		111 NYBERG RD SW, PACIFIC, WA	HPI Inventory Data					X		
HPI 152128		808 CHESTNUT ST, SUMNER, WA	HPI Inventory Data		X		X	X		
HPI 152149		1156 VALENTINE AVE SE, PACIFIC, WA	HPI Inventory Data		X					
HPI 152157		211 KENSINGTON AVE SW, ORTING, WA	HPI Inventory Data					X		
HPI 152216		727-731 8TH PL NW, PUYALLUP, WA	HPI Inventory Data					X		
HPI 152273		209 MT CIRCLE, SUMNER, WA	HPI Inventory Data		X		X	X		
HPI 152278		613 MC KINNON AVE, SUMNER, WA	HPI Inventory Data		X		X			
HPI 152632		918A-918B 9TH ST NW, PUYALLUP, WA	HPI Inventory Data		X		X	X		
HPI 152648		408 CALISTOGA ST W, ORTING, WA	HPI Inventory Data					X	X	
HPI 152657		919-929 11TH ST NW, PUYALLUP, WA	HPI Inventory Data		X		X	X		
HPI 152708		124 MT CIRCLE DR, SUMNER, WA	HPI Inventory Data		X		X	X		
HPI 152822		802 CHESTNUT ST, SUMNER, WA	HPI Inventory Data		X		X	X		
HPI 152850		4322 47TH AVE E, WALLER, WA	HPI Inventory Data					X	X	X
HPI 152970		1016 WILLOW ST, SUMNER, WA	HPI Inventory Data		X		X			
HPI 153144		1009 9TH ST NW, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 153488		1105 RIVER RD, PUYALLUP, WA	HPI Inventory Data		X		X	X	X	X
HPI 153557		1713 W PIONEER, PUYALLUP, WA	HPI Inventory Data					X		
HPI 153594		508 CHERRY AVE, SUMNER, WA	HPI Inventory Data		X		X	X		
HPI 153597		909 3RD ST NE, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 153730		5717 PACIFIC HWY E, FIFE, WA	HPI Inventory Data					X		
HPI 153740		1409 54TH AVE E, FIFE, WA	HPI Inventory Data					X	X	
HPI 153776		1220 11TH ST NW, PUYALLUP, WA	HPI Inventory Data		X		X			

DAHP ID	Property Name	Property Address	WHR/NR Status	Alternative 2 100'APE	Alternative 2 1320' APE	Alternative 3 100' APE	Alternative 3 1320' APE	Inundataion w/o Project	Inundataion w Project	Real Estate Taking
HPI 153808		1702 E MAIN, PUYALLUP, WA	HPI Inventory Data					X	X	X
HPI 153827		161 ROY RD SE, PACIFIC, WA	HPI Inventory Data		X					
HPI 153889		1030 RIVER RD, PUYALLUP, WA	HPI Inventory Data		X		X	X		
HPI 153894		1111 RIVER RD, PUYALLUP, WA	HPI Inventory Data		X		X			
HPI 153919		1103 RIVER RD, PUYALLUP, WA	HPI Inventory Data		X		X		X	X
HPI 154012		219 5TH AVE NE, PUYALLUP, WA	HPI Inventory Data		X		X	X		
HPI 154451	Wallowa, Theodore Foss		HPI Inventory Data					X	X	
HPI 158398		540 E D ST, WA	HPI Inventory Data					X	X	
HPI 158401		401 E 15TH ST, WA	HPI Inventory Data					X	X	
HPI 158410		1448 PAUL AVE, WA	HPI Inventory Data					X	X	
HPI 158868	Wallowa, Theodore Foss		HPI Inventory Data					X	X	
HPI 158932		540 E D ST, Tacoma, WA 98421	HPI Inventory Data					X	X	
HPI 158935		401 E 15TH ST, Tacoma, WA 98421	HPI Inventory Data					X	X	
HPI 158936		XXX E 15TH ST, Tacoma, WA 98421	HPI Inventory Data					X	X	
HPI 158944		1448 PAUL AVE, Tacoma, WA 98421	HPI Inventory Data					X	X	
HPI 184503		540 E D ST, WA	HPI Inventory Data					X	X	
HPI 184506		401 E 15TH ST, WA	HPI Inventory Data					X	X	
HPI 184515		1448 PAUL AVE, WA	HPI Inventory Data					X	X	
HPI 184897	Wallowa, Theodore Foss		HPI Inventory Data					X	X	
HPI 209006		540 E D ST, WA	HPI Inventory Data					X	X	
HPI 209009		401 E 15TH ST, WA	HPI Inventory Data					X	X	
HPI 209018		1448 PAUL AVE, WA	HPI Inventory Data					X	X	
HPI 209345	Wallowa, Theodore Foss		HPI Inventory Data					X	X	
HPI 303499		404 3RD AVE SE, PACIFIC, WA	HPI Inventory Data		X			X		
HPI 303601		105 PACIFIC AVE S, PACIFIC, WA	HPI Inventory Data		X					
HPI 304136		111 PACIFIC AVE S, PACIFIC, WA	HPI Inventory Data		X					
HPI 304390		515 3RD AVE SE, PACIFIC, WA	HPI Inventory Data		X					
HPI 305120		112 EASTGATE AVE S, PACIFIC, WA	HPI Inventory Data		X					
HPI 305758		402 1ST AVE E, PACIFIC, WA	HPI Inventory Data					X		
HPI 306296		108 BUTTE AVE, PACIFIC, WA	HPI Inventory Data					X	X	
HPI 307115		110 CEDAR LN, PACIFIC, WA	HPI Inventory Data		X					
HPI 307258		449 VALENTINE AVE, PACIFIC, WA	HPI Inventory Data		X					
HPI 307485		221 SEATTLE BLVD S, PACIFIC, WA	HPI Inventory Data					X		
HPI 307992		218 2ND AVE SW, PACIFIC, WA	HPI Inventory Data					X		
HPI 308066		210 SEATTLE BLVD S, PACIFIC, WA	HPI Inventory Data					X		
HPI 308133		102 PACIFIC AVE S, PACIFIC, WA	HPI Inventory Data					X		
HPI 308170		309 SEATTLE BLVD S, PACIFIC, WA	HPI Inventory Data					X		
HPI 308338		502 3RD AVE E, PACIFIC, WA	HPI Inventory Data		X					
HPI 308519		229 PACIFIC AVE S, PACIFIC, WA	HPI Inventory Data		X					
HPI 308525		128 HAWTHORNE AVE S, PACIFIC, WA	HPI Inventory Data					X	X	
HPI 308543		599 3RD AVE SE, PACIFIC, WA	HPI Inventory Data	X	X					
HPI 308572		201 HAWTHORNE AVE S, PACIFIC, WA	HPI Inventory Data		X			X	X	
HPI 308664		207 2ND AVE SW, PACIFIC, WA	HPI Inventory Data					X		
HPI 309219		410 5TH AVE SE, PACIFIC, WA	HPI Inventory Data		X			X	X	

DAHP ID	Property Name	Property Address	WHR/NR Status	Alternative 2 100'APE	Alternative 2 1320' APE	Alternative 3 100' APE	Alternative 3 1320' APE	Inundataion w/o Project	Inundataion w Project	Real Estate Taking
HPI 309426		PACIFIC, WA	HPI Inventory Data					X	X	
HPI 310320		109 PACIFIC AVE S, PACIFIC, WA	HPI Inventory Data		X					
HPI 310358		323 3RD AVE SW, PACIFIC, WA	HPI Inventory Data					X		
HPI 310383		539 WEST VALLEY HWY, PACIFIC, WA	HPI Inventory Data					X		
HPI 310408		127 TACOMA BLVD, PACIFIC, WA	HPI Inventory Data					X		
HPI 310878		PACIFIC, WA	HPI Inventory Data					X	X	
HPI 311379		703 3RD AVE SE, PACIFIC, WA	HPI Inventory Data		X					
HPI 311644		136 VALENTINE CT, PACIFIC, WA	HPI Inventory Data		X					
HPI 311725		PACIFIC, WA	HPI Inventory Data					X	X	
HPI 311735		127 HAWTHORNE AVE S, PACIFIC, WA	HPI Inventory Data		X			X	X	
HPI 311787		426 4TH AVE SE, PACIFIC, WA	HPI Inventory Data		X			X		
HPI 312121		255 5TH AVE SW, PACIFIC, WA	HPI Inventory Data					X		
HPI 312219		130 PACIFIC AVE S, PACIFIC, WA	HPI Inventory Data		X					
HPI 312255		PACIFIC, WA	HPI Inventory Data					X	X	
HPI 312513		317 3RD AVE SE, PACIFIC, WA	HPI Inventory Data		X			X	X	
HPI 313361		301 1ST AVE NE, ALGONA, WA	HPI Inventory Data					X	X	
HPI 313727		321 3RD AVE SE, PACIFIC, WA	HPI Inventory Data		X			X	X	
HPI 314486		530 BUTTE AVE, PACIFIC, WA	HPI Inventory Data		X			X	X	
HPI 314568		208 HAWTHORNE AVE S, PACIFIC, WA	HPI Inventory Data		X			X	X	
HPI 314594		PACIFIC, WA	HPI Inventory Data					X	X	
HPI 314822		414 1ST AVE E, PACIFIC, WA	HPI Inventory Data					X	X	
HPI 314998		306 3RD AVE SE, PACIFIC, WA	HPI Inventory Data		X			X		
HPI 315057		600 BUTTE AVE, PACIFIC, WA	HPI Inventory Data		X			X	X	X
HPI 315233		410 3RD AVE SE, PACIFIC, WA	HPI Inventory Data		X					
HPI 315604		524 1ST AVE E, PACIFIC, WA	HPI Inventory Data		X					
HPI 315732		PACIFIC, WA	HPI Inventory Data					X	X	
HPI 315817		PACIFIC, WA	HPI Inventory Data					X	X	
HPI 315856		5285 A ST SE, PACIFIC, WA	HPI Inventory Data		X			X	X	X
HPI 315937		732 1ST AVE E, PACIFIC, WA	HPI Inventory Data		X					
HPI 316039		512 2ND AVE SE, PACIFIC, WA	HPI Inventory Data		X					
HPI 316125		555 VALENTINE AVE, PACIFIC, WA	HPI Inventory Data		X					
HPI 316754		229 SEATTLE BLVD S, PACIFIC, WA	HPI Inventory Data					X		
HPI 316843		123 HAWTHORNE AVE S, PACIFIC, WA	HPI Inventory Data					X	X	
HPI 316950		317 BUTTE AVE, PACIFIC, WA	HPI Inventory Data					X	X	
HPI 317079		105 EASTGATE AVE S, PACIFIC, WA	HPI Inventory Data		X					
HPI 317144		210 HAWTHORNE AVE S, PACIFIC, WA	HPI Inventory Data		X			X	X	
HPI 317435		116 PACIFIC AVE S, PACIFIC, WA	HPI Inventory Data		X			X		
HPI 317727		403 4TH AVE SE, PACIFIC, WA	HPI Inventory Data		X					
HPI 318198		310 3RD AVE SW, PACIFIC, WA	HPI Inventory Data					X		
HPI 318564		221 2ND AVE SW, PACIFIC, WA	HPI Inventory Data					X		
HPI 318807		303 2ND AVE SW, PACIFIC, WA	HPI Inventory Data					X		
HPI 319111		230 3RD AVE SW, PACIFIC, WA	HPI Inventory Data					X		
HPI 319245		528 1ST AVE E, PACIFIC, WA	HPI Inventory Data		X					
HPI 319368		PACIFIC, WA	HPI Inventory Data					X	X	

DAHP ID	Property Name	Property Address	WHR/NR Status	Alternative 2 100'APE	Alternative 2 1320' APE	Alternative 3 100' APE	Alternative 3 1320' APE	Inundataion w/o Project	Inundataion w Project	Real Estate Taking
HPI 319543		521 VALENTINE AVE, PACIFIC, WA	HPI Inventory Data		X					
HPI 320210		503 1ST AVE E, PACIFIC, WA	HPI Inventory Data					X		
HPI 320283		552 VALENTINE AVE, PACIFIC, WA	HPI Inventory Data		X					
HPI 320794		112 CEDAR LN, PACIFIC, WA	HPI Inventory Data		X					
HPI 320933		225 PACIFIC AVE S, PACIFIC, WA	HPI Inventory Data		X					
HPI 321363		219 PACIFIC AVE S, PACIFIC, WA	HPI Inventory Data		X					
HPI 321739		409 3RD AVE SE, PACIFIC, WA	HPI Inventory Data		X			X		
HPI 321816		105 CEDAR LN, PACIFIC, WA	HPI Inventory Data		X					
HPI 322327		108 EASTGATE AVE S, PACIFIC, WA	HPI Inventory Data		X					
HPI 322633		205 PACIFIC AVE S, PACIFIC, WA	HPI Inventory Data		X					
HPI 322967		135 5TH AVE SE, PACIFIC, WA	HPI Inventory Data		X					
HPI 323231		619 3RD AVE E, PACIFIC, WA	HPI Inventory Data		X					
HPI 323288		614 1ST AVE E, PACIFIC, WA	HPI Inventory Data		X					
HPI 323506		334 BUTTE AVE, PACIFIC, WA	HPI Inventory Data		X			X	X	
HPI 324014		302 SEATTLE BLVD S, PACIFIC, WA	HPI Inventory Data					X		
HPI 324167		522 1ST AVE E, PACIFIC, WA	HPI Inventory Data		X					
HPI 324299		105 TACOMA BLVD N, PACIFIC, WA	HPI Inventory Data					X		
HPI 324412		253 5TH AVE SW, PACIFIC, WA	HPI Inventory Data					X		
HPI 324591		204 SEATTLE BLVD S, PACIFIC, WA	HPI Inventory Data					X		
HPI 324685		PACIFIC, WA	HPI Inventory Data					X	X	
HPI 324719		116 EASTGATE AVE S, PACIFIC, WA	HPI Inventory Data		X					
HPI 324813		102 HAWTHORNE AVE S, PACIFIC, WA	HPI Inventory Data					X	X	
HPI 324993		PACIFIC, WA	HPI Inventory Data					X	X	
HPI 325423		400 3RD AVE SW, PACIFIC, WA	HPI Inventory Data					X		
HPI 325470		405 3RD AVE SE, PACIFIC, WA	HPI Inventory Data		X			X		
HPI 325920		101 EASTGATE AVE S, PACIFIC, WA	HPI Inventory Data		X					
HPI 325991		304 1/2 1ST AVE E, PACIFIC, WA	HPI Inventory Data					X	X	
HPI 326862		PACIFIC, WA	HPI Inventory Data					X	X	
HPI 327015		113 PACIFIC AVE S, PACIFIC, WA	HPI Inventory Data		X					
HPI 327114		409 4TH AVE SE, PACIFIC, WA	HPI Inventory Data		X					
HPI 327421		220 2ND AVE SW, PACIFIC, WA	HPI Inventory Data					X		
HPI 327844		205 3RD AVE SE, PACIFIC, WA	HPI Inventory Data					X	X	
HPI 327981		706 1ST AVE E, PACIFIC, WA	HPI Inventory Data		X					
HPI 328144		235 TACOMA BLVD S, PACIFIC, WA	HPI Inventory Data					X		
HPI 328468		304 1ST AVE E, PACIFIC, WA	HPI Inventory Data					X	X	
HPI 338390		520 1ST AVE, PACIFIC, WA	HPI Inventory Data		X					
HPI 338708		603 3RD AVE E, PACIFIC, WA	HPI Inventory Data	X	X					
HPI 340396		4506 A ST SE, PACIFIC, WA	HPI Inventory Data					X	X	X
HPI 344796		114 CEDAR LN, PACIFIC, WA	HPI Inventory Data		X					
HPI 344816		522 1ST PL, PACIFIC, WA	HPI Inventory Data		X					
HPI 344871		546 1ST PL, PACIFIC, WA	HPI Inventory Data		X					
HPI 344954		109 CEDAR LN, PACIFIC, WA	HPI Inventory Data		X					
HPI 344983		542 1ST PL, PACIFIC, WA	HPI Inventory Data		X					
HPI 345024		113 CEDAR LN, PACIFIC, WA	HPI Inventory Data		X					

DAHP ID	Property Name	Property Address	WHR/NR Status	Alternative 2 100'APE	Alternative 2 1320' APE	Alternative 3 100' APE	Alternative 3 1320' APE	Inundataion w/o Project	Inundataion w Project	Real Estate Taking
HPI 345045		102 BUTTE AVE, PACIFIC, WA	HPI Inventory Data					X	X	
HPI 389864		PACIFIC, WA	HPI Inventory Data					X	X	
HPI 390361		221 3RD AVE NW, PACIFIC, WA	HPI Inventory Data					X		
HPI 390709		106 PACIFIC AVE S, PACIFIC, WA	HPI Inventory Data		X			X		
HPI 390788		617 BUTTE AVE, PACIFIC, WA	HPI Inventory Data		X			X	X	X
HPI 391048		125 HAWTHORNE AVE S, PACIFIC, WA	HPI Inventory Data		X			X	X	
HPI 391443		429 4TH AVE SE, PACIFIC, WA	HPI Inventory Data		X					
HPI 391444		322 BUTTE AVE, PACIFIC, WA	HPI Inventory Data					X	X	
HPI 391533		103 EASTGATE AVE S, PACIFIC, WA	HPI Inventory Data		X					
HPI 391872		106 EASTGATE AVE S, PACIFIC, WA	HPI Inventory Data		X					
HPI 391873		109 EASTGATE AVE S, PACIFIC, WA	HPI Inventory Data		X					
HPI 391887		110 BUTTE AVE, PACIFIC, WA	HPI Inventory Data					X	X	
HPI 392034		211 2ND AVE SW, PACIFIC, WA	HPI Inventory Data					X		
HPI 392261		524 BUTTE AVE, PACIFIC, WA	HPI Inventory Data		X			X	X	
HPI 392369		509 BUTTE AVE, PACIFIC, WA	HPI Inventory Data		X			X	X	
HPI 392383		533 VALENTINE AVE, PACIFIC, WA	HPI Inventory Data		X					
HPI 392637		115 PACIFIC AVE S, PACIFIC, WA	HPI Inventory Data		X					
HPI 392746		PACIFIC, WA	HPI Inventory Data					X	X	
HPI 392801		129 HAWTHORNE AVE S, PACIFIC, WA	HPI Inventory Data		X			X	X	
HPI 392896		138 VALENTINE CT, PACIFIC, WA	HPI Inventory Data		X					
HPI 393050		107 EASTGATE AVE S, PACIFIC, WA	HPI Inventory Data		X					
HPI 393379		115 EASTGATE AVE, PACIFIC, WA	HPI Inventory Data		X					
HPI 393396		PACIFIC, WA	HPI Inventory Data					X	X	
HPI 393517		532 VALENTINE AVE, PACIFIC, WA	HPI Inventory Data		X					
HPI 393612		124 HAWTHORNE AVE S, PACIFIC, WA	HPI Inventory Data					X	X	
HPI 393646		303 3RD AVE SW, PACIFIC, WA	HPI Inventory Data					X		
HPI 393870		558 VALENTINE AVE, PACIFIC, WA	HPI Inventory Data		X					
HPI 393871		416 3RD AVE SE, PACIFIC, WA	HPI Inventory Data		X					
HPI 393971		102 EASTGATE AVE S, PACIFIC, WA	HPI Inventory Data		X					
HPI 394017		628 1ST AVE E, PACIFIC, WA	HPI Inventory Data		X					
HPI 394027		710 1ST AVE E, PACIFIC, WA	HPI Inventory Data		X					
HPI 394111		320 3RD AVE SW, PACIFIC, WA	HPI Inventory Data					X		
HPI 394341		201 PACIFIC AVE S, PACIFIC, WA	HPI Inventory Data		X					
HPI 394562		612 2ND AVE SE, PACIFIC, WA	HPI Inventory Data		X					
HPI 394627		408 3RD AVE SE, PACIFIC, WA	HPI Inventory Data		X					
HPI 394939		567 VALENTINE AVE, PACIFIC, WA	HPI Inventory Data		X					
HPI 395124		139 VALENTINE CT, PACIFIC, WA	HPI Inventory Data		X					
HPI 395564		234 2ND AVE SW, PACIFIC, WA	HPI Inventory Data					X		
HPI 395747		330 BUTTE AVE, PACIFIC, WA	HPI Inventory Data		X			X	X	
HPI 395782		105 ASPEN LN S, PACIFIC, WA	HPI Inventory Data		X					
HPI 395888		113 EASTGATE AVE S, PACIFIC, WA	HPI Inventory Data		X					
HPI 396165		126 PACIFIC AVE S, PACIFIC, WA	HPI Inventory Data		X					
HPI 396260		257 5TH AVE SW, PACIFIC, WA	HPI Inventory Data					X		
HPI 396316		110 PACIFIC AVE S, PACIFIC, WA	HPI Inventory Data		X			X		

DAHP ID	Property Name	Property Address	WHR/NR Status	Alternative 2 100'APE	Alternative 2 1320' APE	Alternative 3 100' APE	Alternative 3 1320' APE	Inundataion w/o Project	Inundataion w Project	Real Estate Taking
HPI 396377		428 BUTTE AVE, PACIFIC, WA	HPI Inventory Data		X			X	X	
HPI 396488		520 BUTTE AVE, PACIFIC, WA	HPI Inventory Data		X			X	X	
HPI 396540		116 BUTTE AVE, PACIFIC, WA	HPI Inventory Data					X	X	
HPI 396644		318 4TH AVE SE, PACIFIC, WA	HPI Inventory Data		X			X		
HPI 397018		329 3RD AVE SE, PACIFIC, WA	HPI Inventory Data		X			X		
HPI 397474		401 1ST AVE, ALGONA, WA	HPI Inventory Data					X	X	
HPI 397489		327 1ST AVE NE, ALGONA, WA	HPI Inventory Data					X	X	
HPI 397576		227 PACIFIC AVE S, PACIFIC, WA	HPI Inventory Data		X					
HPI 397853		325 SEATTLE BLVD S, PACIFIC, WA	HPI Inventory Data					X		
HPI 398257		406 1ST AVE E, PACIFIC, WA	HPI Inventory Data					X	X	
HPI 398667		117 PACIFIC AVE S, PACIFIC, WA	HPI Inventory Data		X					
HPI 398930		400 BUTTE AVE, PACIFIC, WA	HPI Inventory Data		X			X	X	
HPI 399310		110 EASTGATE AVE S, PACIFIC, WA	HPI Inventory Data		X					
HPI 399408		545 VALENTINE AVE, PACIFIC, WA	HPI Inventory Data		X					
HPI 399594		506 BUTTE AVE, PACIFIC, WA	HPI Inventory Data		X			X	X	
HPI 399609		326 BUTTE AVE, PACIFIC, WA	HPI Inventory Data					X	X	
HPI 399766		PACIFIC, WA	HPI Inventory Data					X	X	
HPI 400285		328 BUTTE AVE, PACIFIC, WA	HPI Inventory Data					X	X	
HPI 400568		104 EASTGATE AVE S, PACIFIC, WA	HPI Inventory Data		X					
HPI 400654		202 2ND AVE SW, PACIFIC, WA	HPI Inventory Data					X		
HPI 530131		1132 THORNE RD, TACOMA, WA 98421	HPI Inventory Data					X		
HPI 530133		1460 THORNE RD, TACOMA, WA 98421	HPI Inventory Data					X		
HPI 530134		1754 THORNE RD, TACOMA, WA 98421	HPI Inventory Data					X		
HPI 530135		1721 THORNE RD, TACOMA, WA 98421	HPI Inventory Data					X		
HPI 530136		1476 THORNE RD, TACOMA, WA 98421	HPI Inventory Data					X		
HPI 530137		1424 THORNE RD, TACOMA, WA 98421	HPI Inventory Data					X		
HPI 530138		1451 THORNE RD, TACOMA, WA 98421	HPI Inventory Data					X		
HPI 530139		1718 THORNE RD, TACOMA, WA 98421	HPI Inventory Data					X		
HPI 530851		2235 ROSS WAY, TACOMA, WA 98421	HPI Inventory Data					X		
HPI 530852		2331 ROSS WAY, TACOMA, WA 98421	HPI Inventory Data					X		
HPI 530853		2221 ROSS WAY, TACOMA, WA 98421	HPI Inventory Data					X		
HPI 530911		1112 Puyallup Ave, Tacoma, WA 98421	HPI Inventory Data					X	X	
HPI 530918		1713 PUYALLUP AVE, TACOMA, WA 98421	HPI Inventory Data		X		X	X		
HPI 530921		1102 PUYALLUP AVE, TACOMA, WA 98421	HPI Inventory Data					X		
HPI 531177		2201 PORTLAND AVE, TACOMA, WA 98421	HPI Inventory Data		X		X	X		
HPI 531185		1800 PORTLAND ST, TACOMA, WA 98421	HPI Inventory Data					X		
HPI 531197		2018 PORTLAND AVE, TACOMA, WA 98421	HPI Inventory Data		X		X	X		
HPI 531199		1919 PORTLAND AVE, TACOMA, WA 98421	HPI Inventory Data		X		X			
HPI 531200		PORTL PUYAL TRANS, TACOMA, WA 98421	HPI Inventory Data		X		X	X		
HPI 531204		1118 PORT OF TACOMA RD, TACOMA, WA 98421	HPI Inventory Data					X		
HPI 531205		1930 PORT OF TACOMA RD, TACOMA, WA 98421	HPI Inventory Data					X		

DAHP ID	Property Name	Property Address	WHR/NR Status	Alternative 2 100'APE	Alternative 2 1320' APE	Alternative 3 100' APE	Alternative 3 1320' APE	Inundataion w/o Project	Inundataion w Project	Real Estate Taking
HPI 531207		1702 PORT OF TACOMA RD, TACOMA, WA 98421	HPI Inventory Data					X		
HPI 531208		1926 PORT OF TACOMA RD, TACOMA, WA 98421	HPI Inventory Data					X		
HPI 531209		1420 PORT OF TACOMA RD, TACOMA, WA 98421	HPI Inventory Data					X		
HPI 531210		1440 PORT OF TACOMA RD, TACOMA, WA 98421	HPI Inventory Data					X		
HPI 531312		PAUL AVE, TACOMA, WA 98421	HPI Inventory Data					X		
HPI 531317		1200 PAUL AVE, TACOMA, WA 98421	HPI Inventory Data					X		
HPI 531922		1938 MILWAUKEE WAY, TACOMA, WA 98421	HPI Inventory Data					X		
HPI 531926		1970 MILWAUKEE WAY, TACOMA, WA 98421	HPI Inventory Data					X		
HPI 531927	Interstate Freight Lines	1980 MILWAUKEE, TACOMA, WA 98421	HPI Inventory Data					X		
HPI 531928		1952 MILWAUKEE WAY, TACOMA, WA 98421	HPI Inventory Data					X		
HPI 531929		1902 MILWAUKEE WAY, TACOMA, WA 98421	HPI Inventory Data					X		
HPI 532184		2628 MARINE VIEW DR, TACOMA, WA 98422	HPI Inventory Data					X	X	
HPI 532185		MARINE VIEW DR, TACOMA, WA	HPI Inventory Data					X	X	
HPI 532187		3622 MARINE VIEW DR, TACOMA, WA 98422	HPI Inventory Data					X	X	
HPI 532188		1640 MARC AVE, TACOMA, WA 98421	HPI Inventory Data					X		
HPI 532387		2339 LINCOLN AVE, TACOMA, WA 98421	HPI Inventory Data					X		
HPI 532388		2301 LINCOLN AVE, TACOMA, WA 98421	HPI Inventory Data					X		
HPI 532389		1955 LINCOLN AVE, TACOMA, WA 98421	HPI Inventory Data					X		
HPI 532390		2253 LINCOLN AVE, TACOMA, WA 98421	HPI Inventory Data					X		
HPI 532391		1903 LINCOLN AVE, TACOMA, WA 98421	HPI Inventory Data					X		
HPI 532392		2367 LINCOLN AVE, TACOMA, WA 98421	HPI Inventory Data					X		
HPI 533454		2605 E G ST, TACOMA, WA 98421	HPI Inventory Data					X		
HPI 533779		225 E F ST, TACOMA, WA 98421	HPI Inventory Data					X	X	
HPI 533987		1801 E D ST, TACOMA, WA 98421	HPI Inventory Data					X		
HPI 533992		1815 E D ST, TACOMA, WA 98421	HPI Inventory Data					X		
HPI 533993		1525 E D ST, TACOMA, WA 98421	HPI Inventory Data					X		
HPI 534435		1701 E BAY ST, TACOMA, WA 98421	HPI Inventory Data		X		X	X		
HPI 534436		1601 E BAY ST, TACOMA, WA 98421	HPI Inventory Data		X		X	X	X	
HPI 534437		2610 E BAY ST, TACOMA, WA 98421	HPI Inventory Data		X		X	X	X	
HPI 536731		1001 E 26th St, Tacoma, WA 98421	HPI Inventory Data					X		
HPI 536736		801 E 26th St, Tacoma, WA 98421	HPI Inventory Data					X	X	
HPI 536751		712 E 26TH ST, TACOMA, WA 98421	HPI Inventory Data					X	X	
HPI 536752	Tacoma Box Company	923 E 26th St, Tacoma, WA 98421	HPI Inventory Data					X	X	
HPI 536859		1002 E 21ST ST, TACOMA, WA 98421	HPI Inventory Data	X	X	X	X			
HPI 536903		480 E 19TH ST, TACOMA, WA 98421	HPI Inventory Data					X		
HPI 536932		420 E 18TH ST, TACOMA, WA 98421	HPI Inventory Data					X		
HPI 536933		448 E 18TH ST, TACOMA, WA 98421	HPI Inventory Data					X		
HPI 537213		2220 E 11TH ST, TACOMA, WA 98421	HPI Inventory Data					X		
HPI 537221		2220 E 11TH ST, TACOMA, WA 98421	HPI Inventory Data					X		
HPI 537237		2332 E 11TH ST, TACOMA, WA 98421	HPI Inventory Data					X		

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HPI 537240		2336 E 11TH ST, TACOMA, WA 98421	HPI Inventory Data					X		
HPI 537241		2432 E 11TH ST, TACOMA, WA 98421	HPI Inventory Data					X		
HPI 537243		2316 E 11TH ST, TACOMA, WA 98421	HPI Inventory Data					X		
HPI 537245		2310 E 11TH ST, TACOMA, WA 98421	HPI Inventory Data					X		
HPI 537246		2306 E 11TH ST, TACOMA, WA 98421	HPI Inventory Data					X		
HPI 537249		2324 E 11TH ST, TACOMA, WA 98421	HPI Inventory Data					X		
HPI 537254		2338 E 11TH ST, TACOMA, WA 98421	HPI Inventory Data					X		
HPI 537256		2216 E 11TH ST, TACOMA, WA 98421	HPI Inventory Data					X		
HPI 537258		702 E 11TH ST, TACOMA, WA 98421	HPI Inventory Data					X	X	
HPI 586400	4016 47th AVE E, Tacoma	4016 47th Ave E, Tacoma, WA 98443	HPI Inventory Data					X	X	X
HPI 586405	4015 47th AVE E, Tacoma	4015 47th Ave E, Tacoma, WA 98443	HPI Inventory Data					X	X	X
HPI 651604	Bergh House	3806 Gay Rd E, Tacoma, WA 98443	HPI Inventory Data		X		X	X	X	
HPI 651605	Bergh Barn	3806 Gay Rd E, Tacoma, WA 98443	HPI Inventory Data		X		X	X	X	
HPI 651606	Rybin House	3714 Gay Rd E, Tacoma, WA 98443	HPI Inventory Data		X		X	X	X	
HPI 665713	Meridian Street Bridge	0000 N Meridian St N, Puyallup, WA 98424	HPI Inventory Data		X		X	X	X	X
HPI 665912		507 Deeded Ln SW, Orting, WA 98360	HPI Inventory Data					X		
HPI 665934	Kaelin & Kaelin Dairy Shed	Route 1 Box 95, Orting, WA 98360	HPI Inventory Data					X	X	
HPI 667001	Mead M. Murray House	1103 Meridian St N, Puyallup, WA 98371	HPI Inventory Data		X		X	X		
HPI 667002	Paul A. Lindsay House	1029 Meridian St N, Puyallup, WA 98371	HPI Inventory Data		X		X	X		
HPI 667534	Fort Maloney Historical Marker	0000 N Levee Rd N, Puyallup, WA	HPI Inventory Data		X		X			
HPI 667536	North Bank Puyallup River Revetment	0000 Meridian St N, Puyallup, WA 98424	HPI Inventory Data		X		X			
HPI 667909		4508 70th Ave E, Fife, WA	HPI Inventory Data		X					
HPI 669272	Kaelin & Kaelin Dairy Shed	19112 Pioneer Way East, Orting, WA 98360	HPI Inventory Data					X	X	
HPI 669624		1712 Pioneer W, Puyallup, WA 98371	HPI Inventory Data					X		
HPI 672060	Milwaukee Bridge	none Milwaukee Ave NE, Puyallup, WA	HPI Inventory Data		X		X	X	X	
HPI 672114	Velsher Parcel	6319 Milwaukee Ave E, Puyallup, WA 98372	HPI Inventory Data		X		X			
HPI 672508		4722 44th street, Tacoma, WA 98443	HPI Inventory Data					X	X	X
HPI 672509		4014 50th Ave E, Tacoma, WA 98443	HPI Inventory Data					X	X	X
HPI 672510		3005 29th St E, Tacoma, WA 98443	HPI Inventory Data		X		X	X	X	X
HPI 672789	Chicago, Milwaukee, St. Paul & Pacific Railroad	Railroad Tracks west of intersection, Milwaukee Way and Marshall A, Tacoma, WA	HPI Inventory Data					X		
HPI 673455		1701 E Bay Street, Tacoma, WA 98421	HPI Inventory Data		X		X	X		
HPI 673503		2610 E. Bay St, Tacoma, WA 98421	HPI Inventory Data		X		X	X	X	
HPI 674416		2223 Cleveland Way, Tacoma, WA 98421	HPI Inventory Data	X	X	X	X	X	X	
HPI 675108	Northern Pacific Railway Bridge	0 State Route 162 E, Orting, WA 98360	HPI Inventory Data					X	X	
HPI 675784	City of Tacoma Central Treatment Plant	2201 Portland Avenue, Tacoma, WA 98421	HPI Inventory Data		X		X	X		
HPI 677038		5320 52nd E, Puyallup, WA 98443	HPI Inventory Data					X	X	
PI00260	Puyallup Waterway Crossing		WHR					X	x	
PI00580	CUSHMAN CEMETERY, HISTORIC CEMETERY, CA. 1858		WHR	X	X	X	X	X	X	
PI00283	BURLINGTON NORTHERN BRIDGE OVER RAILROAD TRACKS							X	X	

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PI00580	Puyallup Tribe Cemetery		WHR	X	X		X	X	X	
KI01002	Historic Archaeological Site		Potentially Eligible	X	X			X	X	
KI01023	Historic Archaeological Site		Potentially Eligible					X		
PI00456	Historic Archaeological Site		Potentially Eligible					X	X	
PI00661	Historic Archaeological Site		Potentially Eligible		X		X	X	X	
PI00664	Historic Archaeological Site		Potentially Eligible		X		X	X	X	
PI00706	Historic Archaeological Site		Potentially Eligible		X		X	X	X	
PI00717	Historic Archaeological Site		Potentially Eligible		X			X	X	
PI00724	Historic Archaeological Site		Potentially Eligible					X		
PI00729	Historic Archaeological Site		Potentially Eligible		X		X	X	X	
PI00826	Historic Archaeological Site		Potentially Eligible		X			X		
PI00906	Historic Archaeological Site		Potentially Eligible					X	X	
PI00917	Historic Archaeological Site		Potentially Eligible					X	X	
PI00963	Historic Archaeological Site							X	X	
PI00964	Historic Archaeological Site		Determined Not Eligible					X	X	
PI00968	Historic Archaeological Site								X	
PI00975	Historic Archaeological Site		Potentially Eligible					X	X	
PI01222	Historic Archaeological Site		Potentially Eligible					X	X	
PI01223	Historic Archaeological Site				X		X	X	X	
PI01238	Historic Archaeological Site		Potentially Eligible		X			X	X	
PI01301	Historic Archaeological Site		Potentially Eligible				X	X	X	
PI01307	Historic Archaeological Site		Potentially Eligible					X		
PI00584	Williams, Herbert, House		WHR/NR					X		
PI00587	Williams, Sidney, House		WHR/NR					X		
KI00033	Prehistoric Archaeological Site							X	X	
KI01150	Prehistoric Archaeological Site							X	X	
KI01151	Prehistoric Archaeological Site							X	X	
PI00047	Prehistoric Archaeological Site							X	X	
PI00079	Prehistoric Archaeological Site							X	X	
PI00080	Prehistoric Archaeological Site							X	X	
PI00930	Prehistoric Archaeological Site			X	X	X	X	X	X	
PI00967	Prehistoric Archaeological Site			X	X	X	X	X	X	
PI00974	Prehistoric Archaeological Site							X	X	
PI01188	Prehistoric Archaeological Site							X	X	
PI01203	Prehistoric Archaeological Site							X	X	
PI01327	Prehistoric Archaeological Site		Determined Not Eligible					X	X	
PI00660	McMillin Bridge		WHR/NR					X	X	
PI00742	M.V. Kalakala (ferry)		WHR/NR					X	X	
PI00761	Balfour Dock Building		WHR/NR					X		
PI00803	Schoenbachler Barn		WH-BARN					X	X	
PI00819	Barn		WH-BARN					X	X	
PI00252	WOOLREY-KOEHLER HOP KILN							X	X	

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