TECHNICAL MEMORANDUM

GAP TO GAP FLOODPLAIN RESTORATION AND ENHANCEMENT PLAN

Prepared for

Yakima County

Prepared by

Anchor QEA, LLC

8033 W. Grandridge Avenue, Suite A

Kennewick, Washington 99336

January 2014

TABLE OF CONTENTS

List of Tables

List of Figures

List of Appendices

LIST OF ACRONYMS AND ABBREVIATIONS

BPA	Bonneville Power Administration
CFHMP	Comprehensive Flood Hazard Management Plan
DID	Diking Improvement District
EA	Environmental Analysis
Ecology	Washington State Department of Ecology
ESA	Endangered Species Act
ESSB	Engrossed Substitute Senate Bill
FCAAP	Flood Control Assistance Account Program
FCZD	Flood Control Zone District
FEMA	Federal Emergency Management Agency
I	Interstate
KGH	Kennewick General Hospital
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
O&M	operation and maintenance
PCSRF	Pacific Coast Salmon Recovery Fund
PL	Public Law
Plan or Gap to Gap Plan	Gap to Gap Floodplain Restoration and Enhancement Plan
RCO	Recreation and Conservation Office
RCW	Revised Code of Washington
Reclamation	U.S. Bureau of Reclamation
SEPA	State Environmental Policy Act
SR	State Route
SRFB	Salmon Recovery Funding Board
USACE	U.S. Army Corps of Engineers
WDFW	Washington Department of Fish and Wildlife
WDNR	Washington State Department of Natural Resources

WRDA	Water Resources Development Act
WSDOT	Washington State Department of Transportation
WWRP	Washington Wildlife and Recreation Program
WWTP	Wastewater Treatment Plant
YBFWRB	Yakima Basin Fish and Wildlife Recovery Board
YBIP	Yakima Basin Integrated Water Resource Management Plan
YRBWEP	Yakima River Basin Water Enhancement Project

1 INTRODUCTION

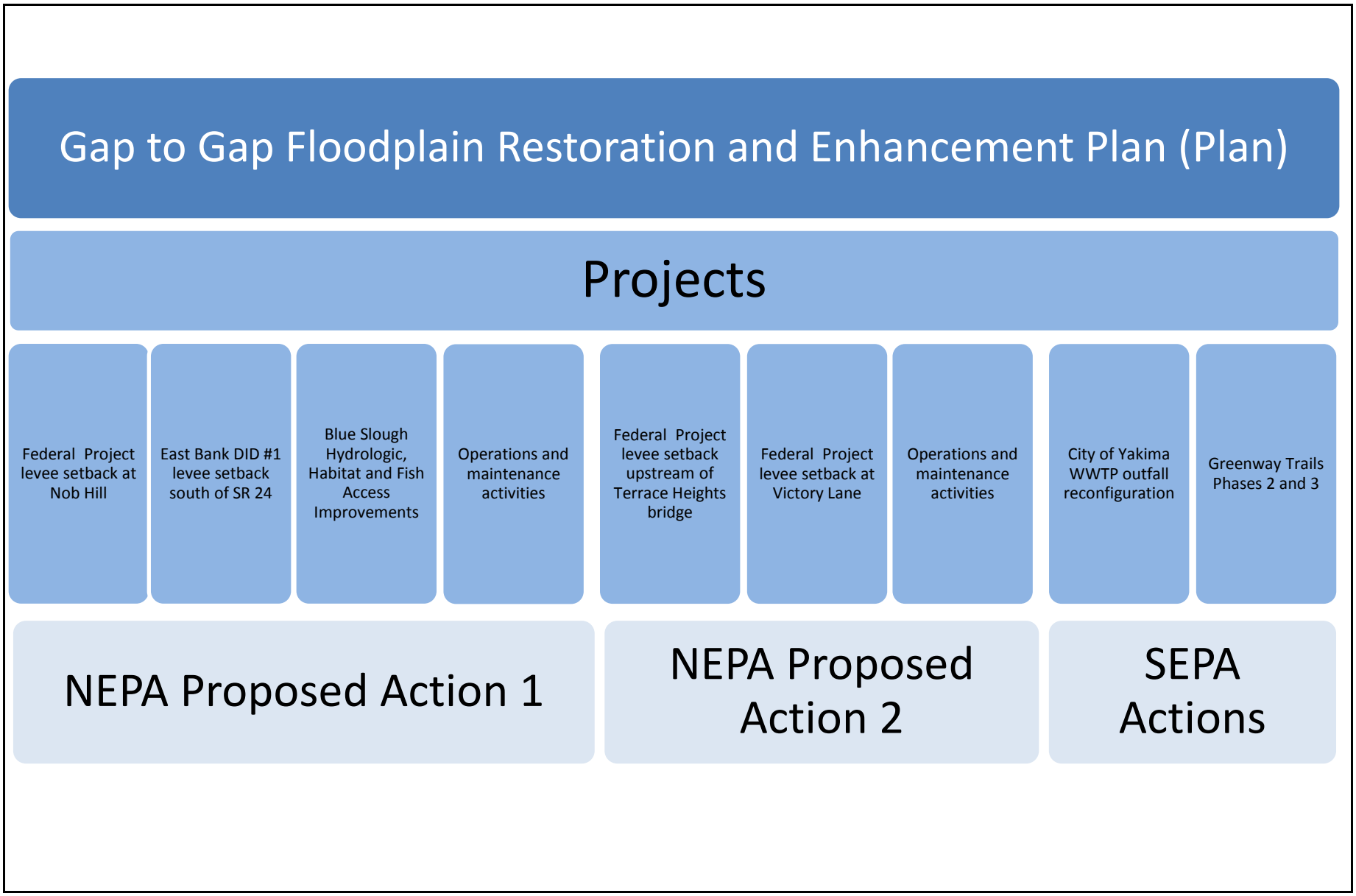
Anchor QEA, LLC, has been hired by Yakima County to assist with completing environmental review under the State Environmental Policy Act (SEPA) and the National Environmental Policy Act (NEPA) for the Gap to Gap Floodplain Restoration and Enhancement Plan (Plan or Gap to Gap Plan). The Plan contains the most significant proposed modifications for the Gap to Gap area from the 1998 Comprehensive Flood Hazard Management Plan (CFHMP) and the 2007 Upper Yakima CFHMP update, including several projects in the reach designed to address flood protection, floodplain restoration, and levee maintenance/failure issues. The projects included in the Plan are also consistent with the goals and associated wetland and floodplain habitat measures of the Yakima Basin Conservation Plan (Yakima River Basin Conservation Advisory Group 1998), and address the fish habitat restoration goals set forth in the 2009 Yakima Steelhead Recovery Plan and the goals set forth in the 2011 Yakima River Basin Study Volume 1: Proposed Integrated Water Resource Management Plan (YBIP; Reclamation and Ecology 2011).

As described further in this technical memorandum, the following projects are included in this Plan:

1. Federal project levee setback at Nob Hill
2. East Bank DID #1 levee setback south of SR 24
3. Blue Slough Hydrologic, Habitat, and Fish Access Improvements
4. Federal project levee setback upstream of Terrace Heights bridge
5. Federal project levee setback at Victory Lane
6. City of Yakima Wastewater Treatment Plant (WWTP) outfall reconfiguration
7. Greenway Trail Phases 2 and 3
8. Operation and maintenance (O&M) activities

This technical memorandum describes the projects included in the Plan and the approach for grouping these projects into proposed actions for NEPA and SEPA environmental review. See Figure 1 for an illustration of how the Plan projects are organized into proposed actions for environmental review. Section 2 includes a discussion of the Plan area history. Individual projects are described in Section 3, along with permitting compliance requirements. Project groupings into proposed actions are described further in Sections 4

and 5, along with recommended NEPA and SEPA compliance approaches and potential alternatives to be considered. Section 6 identifies potential federal, state, and local funding opportunities and associated requirements. This document also identifies the affected environment elements to be addressed in the environmental review (see Appendix A), and an outline of a Section 1135 environmental assessment (EA) document (Appendix B). Appendix C includes a summary of 2013 meetings held with stakeholders.



H:\Staff Folders\Melissa Stefanec\Figures\Figure 1.docx

ANCHOR QEA

Figure 1
Gap to Gap Plan Structure Chart
Gap to Gap Floodplain Restoration and Enhancement Plan
Technical Memorandum

2 PLAN AREA HISTORY

In 1994, Congress passed the Yakima River Basin Water Enhancement Project (YRBWEP) Phase II legislation (YRBWEP 1994; also commonly referred to as Title XII), which modified the role and authorities of the U.S. Bureau of Reclamation (Reclamation) in the management of the Yakima Basin irrigation project and overall water management in the Yakima Basin. In 1998, the Yakima Basin Conservation Plan (Yakima River Basin Conservation Advisory Group) was provided to Reclamation, and included the recommendation to acquire floodplain properties to improve habitat and mitigate for loss of wetland habitats, which might occur as a result of water conservation projects in the Yakima Basin.

At that same time, Reclamation, the Washington State Department of Ecology (Ecology), the Yakima Nation, and the Bonneville Power Administration (BPA) funded the Flathead Lake Biological Station to perform research on the mainstem floodplain of the Yakima River. These studies included the recommendation to purchase and restore floodplains in the Gap to Gap Reach as the highest priority restoration action in the Yakima Basin. Consequently, Reclamation purchased significant areas of floodplain in the Gap to Gap Reach under their YRBWEP Phase II authorities (1994). The purchase of these floodplains provided the opportunity to implement the flood hazard reduction/floodplain restoration projects proposed under the Plan.

The purchase of floodplain properties by Reclamation was coincident with plans by WSDOT to replace the SR 24 bridge. Reclamation asked WSDOT to consider floodplain restoration and floodplain function in the design of that structure. WSDOT convened a cooperative planning group in 2002 comprising those local, state, federal, and tribal agencies with direct interests in the Gap to Gap area, and developed a preferred alternative that increased the span of the SR 24 bridge from approximately 600 feet to more than 1,500 feet. The Washington State legislature funded the bridge with the increased span the following year.

As a result of these actions, Yakima County revised the Upper Yakima CFHMP, and the county and cities of Yakima and Union Gap adopted the Plan in 2007. All of the projects proposed for environmental review are elements of that plan. Since plan adoption, many other structural elements of the CFHMP have been implemented either as funding became

available, or as a result of emergency actions performed in conformance with the plan. Beyond the legal need for looking at the future proposed actions under NEPA and SEPA, the preparation of the environmental review also serves as an update to, and a much more thorough analysis of the impacts and sequencing of, the remaining structural flood hazard reduction and environmental restoration elements of the CFHMP in the Gap to Gap Reach.

2.1 Authority

Yakima County is seeking funding and approvals from the U.S. Army Corps of Engineers (USACE) to reconfigure Yakima federal project levees, non-federal levees, and other associated infrastructure, and restore habitat functions in the Plan area to improve habitat complexity and river functions while maintaining flood protection under two primary USACE authorities: Section 1135 of the Water Resources Development Act (WRDA) and Section 408 of the Rivers and Harbors Act.

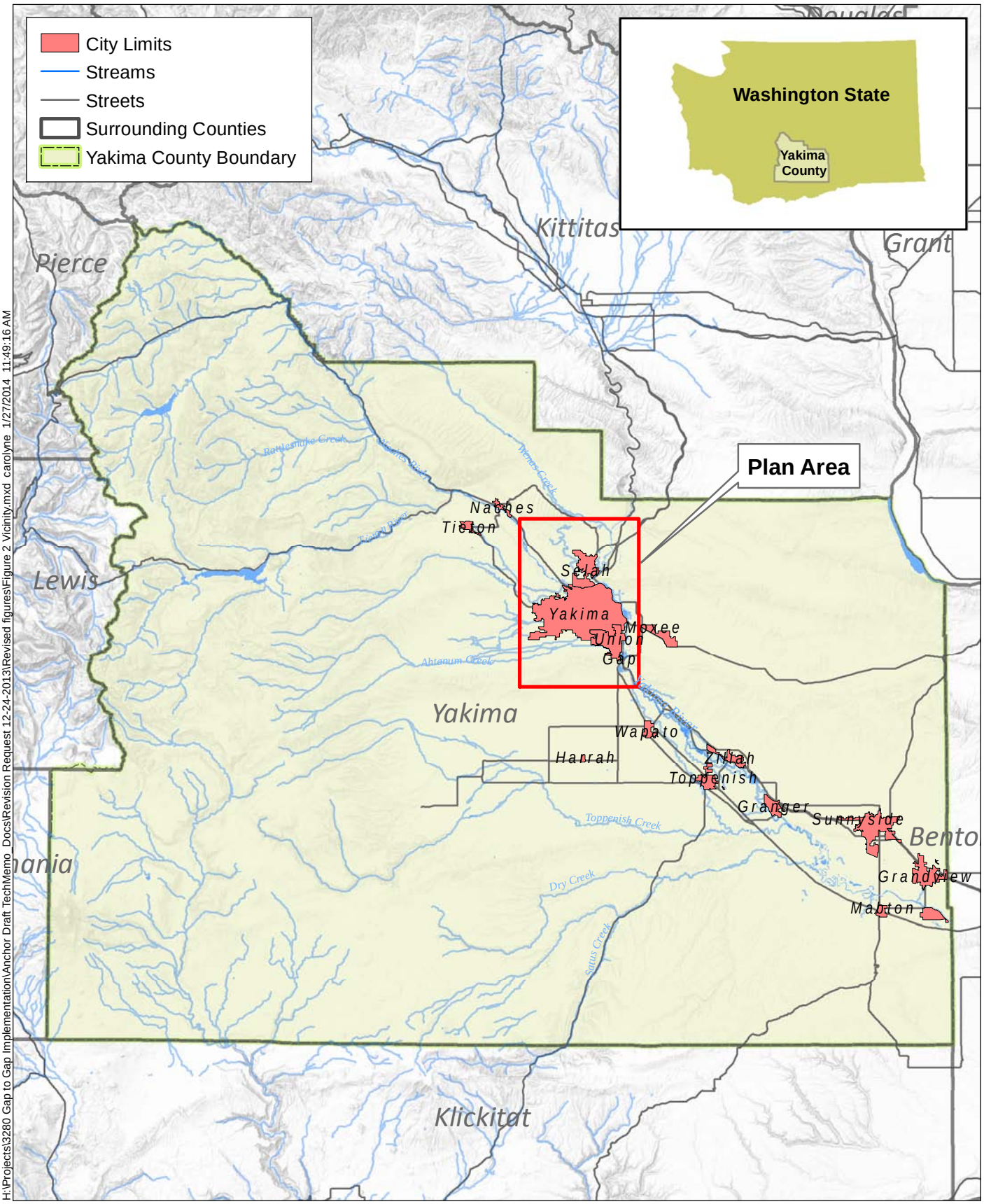
USACE, in partnership with Yakima County as the non-federal sponsor, is authorized under Section 1135 of the WRDA of 1986 to plan, design, and implement restoration of habitat and ecosystem functions in areas affected by the Yakima federal project levees. This includes the Gap to Gap area in the Yakima River, which has been significantly modified through the Yakima federal project levee system and associated non-federal actions. Section 1135 authorizes USACE to modify existing projects to restore the environment and construct new projects to restore areas degraded by USACE projects.

Separate from the Section 1135 process, Yakima County will also seek approval for modifications to the Yakima federal project levees under 33 USC 408 (Section 408). Section 408, authorized in the Rivers and Harbors Act of 1899 and as amended in 1985, allows USACE to grant permission to alter public works so long as the alteration does not impair the usefulness of the project and is not injurious to the public interest. Any proposed modification to an existing USACE project (either federally or locally maintained) that goes beyond those modifications required for normal O&M requires approval under 33 USC 408. An important USACE review item will be to ensure the proposed modifications that go beyond normal O&M do not impact the structural or the intended purpose of the authorized Yakima federal project levees.

Other USACE authorities that could also support Plan projects in the future include WRDA Section 205, which authorizes USACE to plan and construct small flood damage reduction projects that have not already been specifically authorized by Congress, and WRDA Section 206, which authorizes USACE to restore degraded aquatic ecosystems, if the projects demonstrate they will result in increased aquatic ecosystem habitat units and are cost-effective.

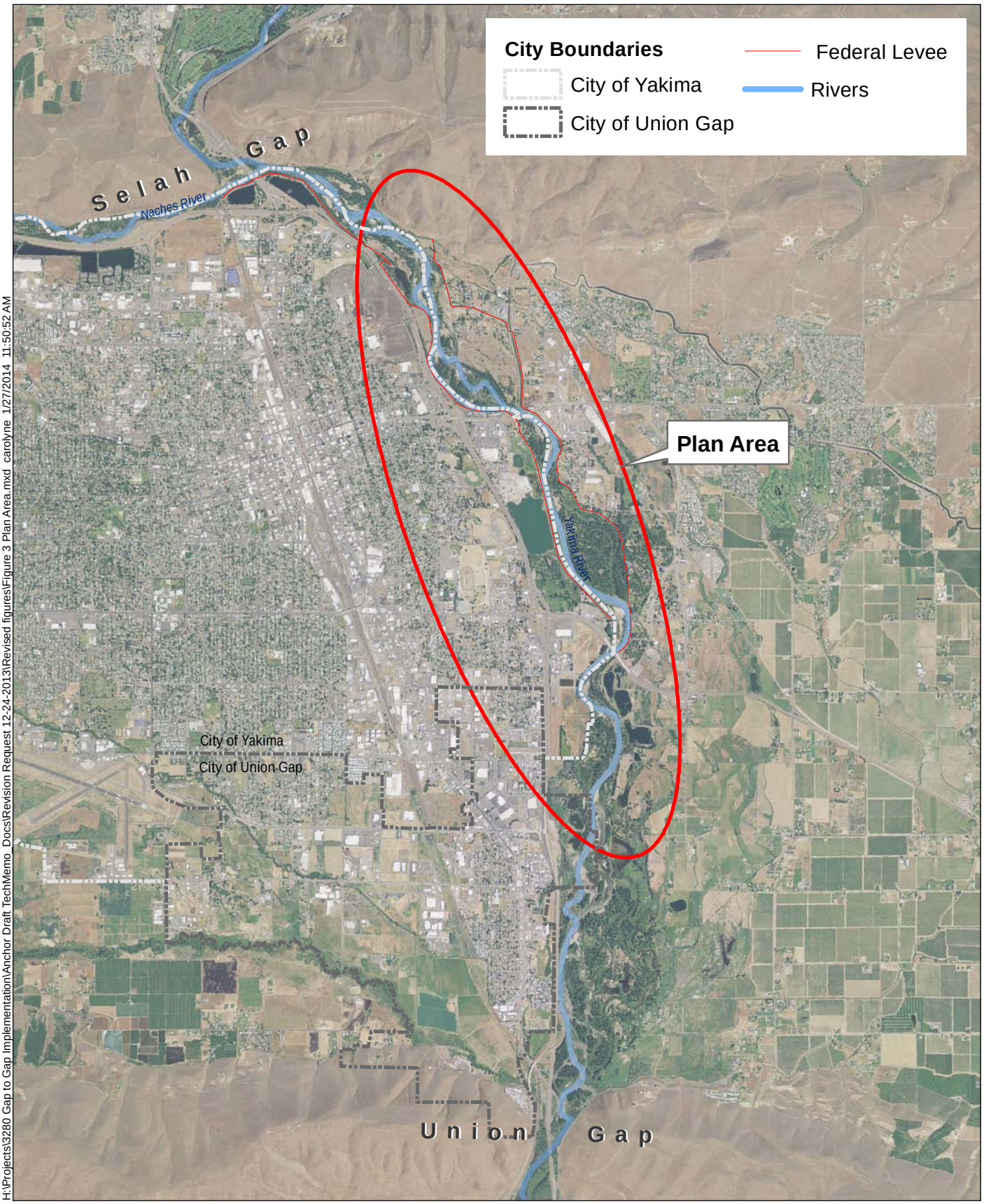
2.2 Plan Area

The Plan area is along the Yakima River in the vicinity where Interstate 82 (I-82) and State Route 24 (SR 24) intersect and within the jurisdictions of Yakima County, City of Yakima, and the City of Union Gap. The Gap to Gap Reach extends between Selah Gap to the north and Union Gap to the south (flow is from north to south). The Naches River, a significant tributary to the Yakima River, enters from the west at the northern end of the reach just downstream of Selah Gap. See Figure 2 and Figure 3 for a vicinity map and map of the Plan area, respectively.



H:\Projects\3280 Gap to Gap Implementation\Anchor Draft TechMemo_Docs\Revision Request 12-24-2013\Revised figures\Figure 2 Vicinity.mxd carolyne 1/27/2014 11:49:16 AM

Figure 2
Vicinity Map
Gap to Gap Floodplain Restoration
and Enhancement Plan
Technical Memorandum



H:\Projects\3280 Gap to Gap Implementation\Anchor Draft TechMemo_Docs\Revision Request 12-24-2013\Revised figures\Figure 3 Plan Area.mxd carolyne 1/27/2014 11:50:52 AM

Yakima County GIS

Feet
0 4,000 8,000

Figure 3
Plan Area
Gap to Gap Floodplain Restoration and Enhancement Plan
Technical Memorandum

2.3 Study Area Context and History

Significant flood damages were experienced in the Study Area in 1933 before existence of the Yakima federal project levees, leading to Congressional authorization for the Yakima Project Levees in the 1936 Flood Control Act. Significant flooding occurred again in 1948, just before completion of the Yakima federal project levees. Floods in the 1910s spurred the building of the following levees for flood protection in the 1910 to 1920 timeframe: DID #1, DID #3, and DID #4. The City of Yakima's levee located south of SR 24 was constructed in the 1950s and enhanced by USACE in the 1970s. The purpose of the City of Yakima's levee was primarily for erosion control, but it also offers some flood protection.

The Gap to Gap Reach levee system is made up of the following: Yakima federal project levees constructed by USACE in 1947 to 1948; locally owned (County and City of Yakima) levees enrolled in the USACE Public Law (PL) 84-99 program; "Diking Improvement District" (DID) levees (DID #1 levee is currently unmaintained; other small remnants of DID #3 and #4 levees are abandoned); and portions of U.S. Route 12 (US 12) and I-82, which function as levees. The federal project levees, and US 12 and I-82 in the Gap to Gap Reach, are accredited by the Federal Emergency Management Agency (FEMA) for the 100-year flood, thereby removing the urban areas of the City of Yakima, Terrace Heights, and the City of Union Gap from flood insurance requirements that would total millions of dollars annually if these communities were deemed to be in the 100-year floodplain. The Yakima federal project levee protection provided to the City of Yakima and Terrace Heights within the Gap to Gap Reach is estimated by USACE to be $500 and $45 million (totaling $545 million for these Yakima County urbanized areas), respectively (USACE 2013).

2.3.1 Convergence of Two Rivers

The Gap to Gap Reach is situated below the confluence of the Naches and upper Yakima rivers, and sediment supplied to the Gap to Gap Reach comes primarily from the Naches River. The combined effects of these river flows and sediment inputs have created a high energy, high sediment movement area in the Gap to Gap Reach that is confined within a narrow flood conveyance channel (i.e., not connected to the river's natural floodplain). Constrictions within the current configuration of levees and bridges in the Gap to Gap Reach cause continual sediment deposition and aggradation that reduce levee freeboard and lock

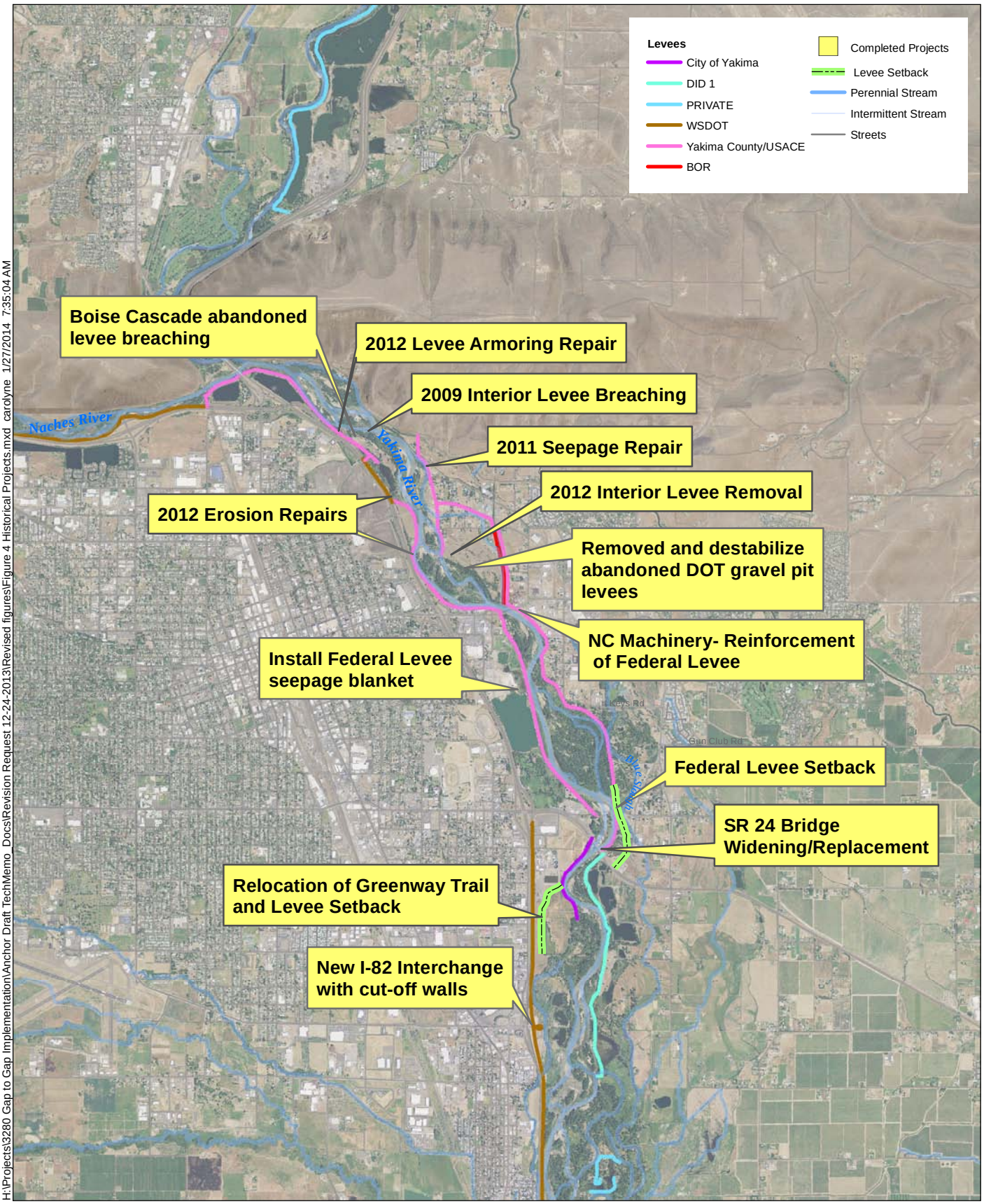
the channel alignment in patterns that increase levee damage and erosion. Resulting sediment accumulation has led to continual loss of flood conveyance capacity for the 100-year flood. This has resulted in the need to periodically raise levee sections, and can be expected to result in significant future costs associated with raising the levee system to maintain adequate freeboard and ongoing FEMA accreditation. Additionally, the significant flow velocities in the reach have led to areas along the levee system that have required repeated emergency levee repairs and other associated projects as discussed further in this technical memorandum.

2.3.2 Levee Risks and Repairs

Flood damages were avoided in the 1970s and 1990s during flood events, including a major flood flow event in 1996, because of emergency repairs to the levee system performed by Yakima County and the USACE. Since the major 1996 flood event, levee repairs have totaled over $5 million for federal project levees and $500,000 for the City of Yakima's west bank levee at the Yakima Regional WWTP (south of SR 24). The presence of numerous confining flood protection levees and road crossings that further constrict the river have resulted in increased flood hazards due to their disruption of, and increased exposure to, natural riverine processes due to the higher velocities and flows concentrated along these facilities. The ability of flood protection facilities to withstand erosion and overtopping by floodwaters is a continuing concern in the Gap to Gap Reach. Figure 2 shows recent levee repair and restoration projects completed, along with the federal project levees and aggradation areas.

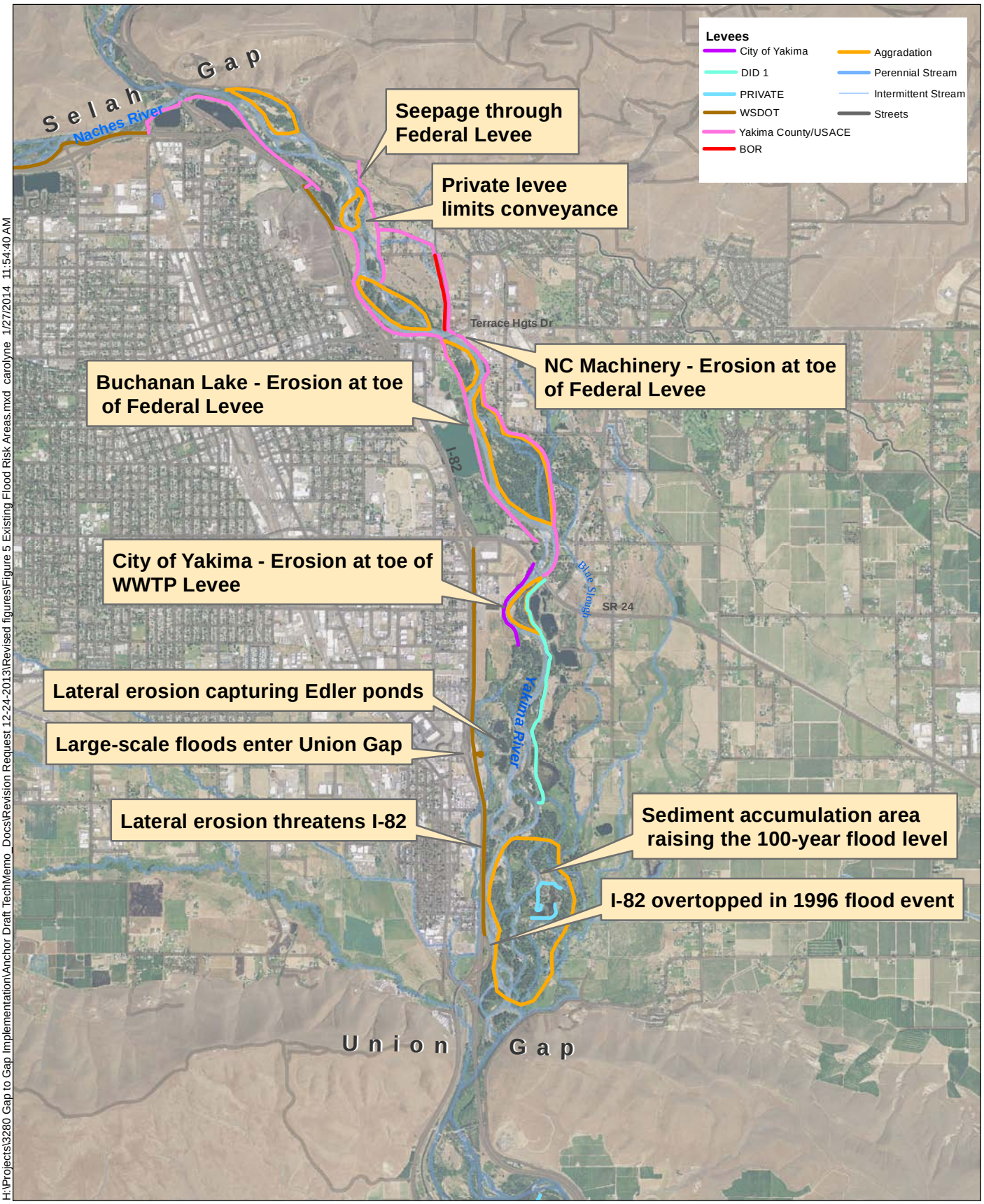
The Yakima County Flood Control Zone District (FCZD) has performed hydraulic and sediment studies to identify levee failure risk levels and assess measures to reduce flood risks, and has also identified ongoing maintenance and repair needs. Recommendations were included in the 1998 Upper Yakima CFHMP (KCM 1997) and the 2007 Upper Yakima CFHMP Update (Otak and KCM 2007). See Section 2.4.2 for additional information on the CFHMP. Areas that have been documented as major threats for levee or bridge failure include the SR 24 bridge crossing, KOA campground, NC Machinery, Buchanan Lake, Terrace Heights bridge, and the City of Yakima WWTP levee (KCM 1997; Otak and KCM 2007). Emergency repairs have occurred at these locations in recent years, as identified on Figure 4. Remaining flood risk areas are shown on Figure 5.

Since development of the CFHMPs, the SR 24 bridge crossing was rebuilt in 2006 by the Washington State Department of Transportation (WSDOT) to expand the bridge span from 800 feet to 1,500 feet in length (at an additional cost of $15 million). In 2012, USACE relocated a levee on the east bank of the Yakima River and upstream of the SR 24 east bank levee through an abandoned KOA campground that had been acquired by Reclamation. This emergency project was required when the upstream end of the levee began to fail. Total cost for this levee relocation was $2.9 million.



H:\Projects\3280 Gap to Gap Implementation\Anchor Draft TechMemo_Docs\Revision Request 12-24-2013\Revised figures\Figure 4 Historical Projects.mxd carolyne 1/27/2014 7:35:04 AM

Figure 4
Historical Levee Repair and Restoration Projects
Gap to Gap Floodplain Restoration
and Enhancement Plan
Technical Memorandum



H:\Projects\3280 Gap to Gap Implementation\Anchor Draft TechMemo_Docs\Revision Request 12-24-2013\Revised figures\Figure 5 Existing Flood Risk Areas.mxd carolyne 1/27/2014 11:54:40 AM

Yakima County GIS

Feet
0 3,000 6,000

Figure 5
Existing Flood Risk Areas
Gap to Gap Floodplain Restoration and Enhancement Plan
Technical Memorandum

2.3.3 Degraded Floodplain Functions

Gap to Gap Reach floodplains are substantially degraded compared to historical conditions. Figure 6 shows an existing conditions overlay on a 1928 image. When floodplains are cut off from the river by levees, embankments, or other structures, habitat and floodplain functions can be diminished or entirely lost. Some of these lost functions include disconnection of side channel habitats from the main channel and a loss of habitat diversity due to sediment movement and concentrated riverine flows in the narrowed floodplain area. Extensive gravel mining within the floodplain reaches has also affected surface/groundwater connectivity. These modifications have acted to simplify the channel, thereby reducing the capacity of the Yakima River to convey flood waters, variability in channel environments, and the quantity and quality of habitat for salmonids (Stanford et al. 2002).

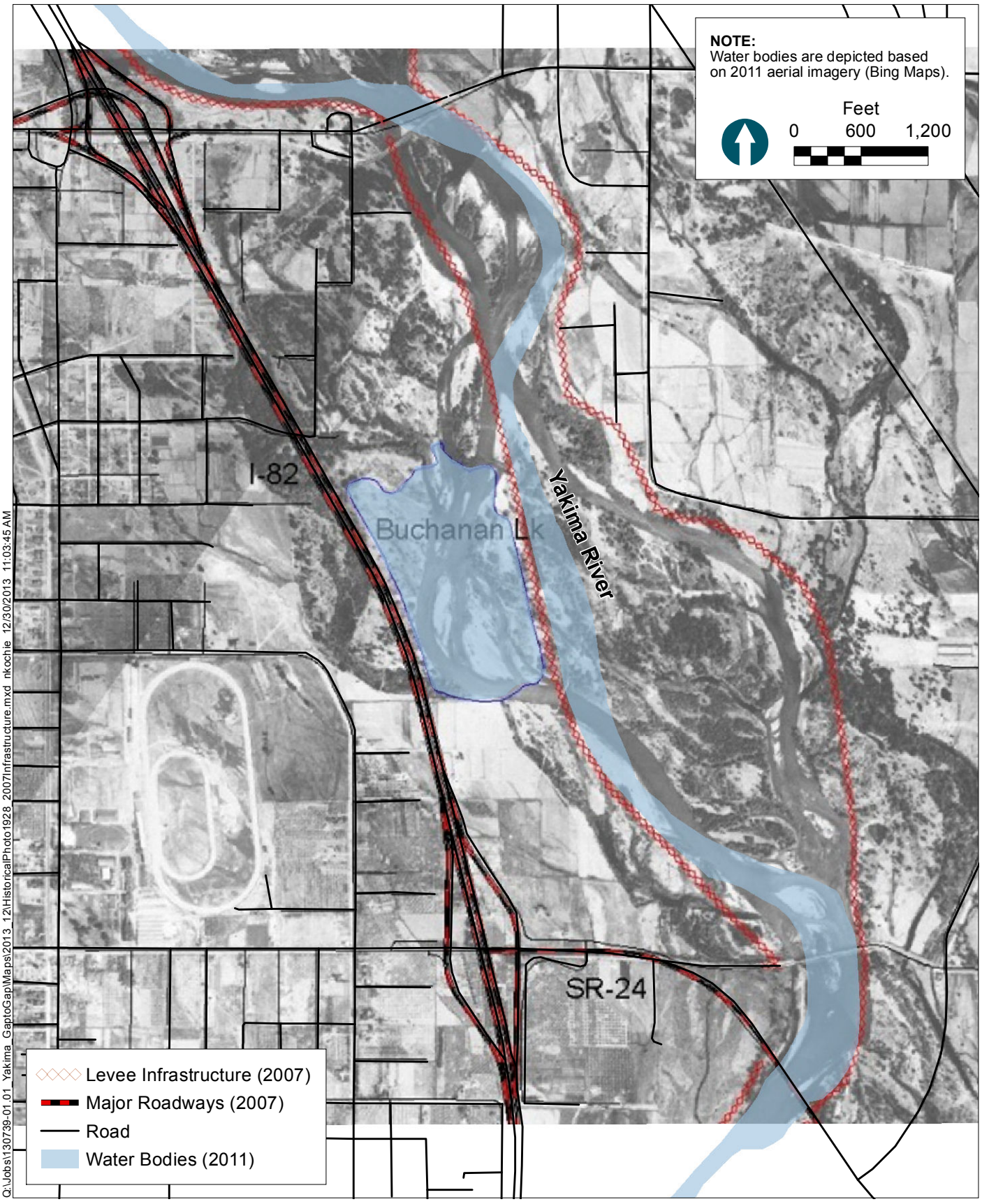


Figure 6
Existing Conditions Overlay on 1928 Photo
Gap to Gap Floodplain Restoration and Enhancement Plan
Technical Memorandum

ANCHOR QEA

2.3.4 Gap to Gap Restoration Potential

The Gap to Gap Reach and other floodplain areas in the basin are important for reestablishing and maintaining healthy populations of anadromous salmonids (Snyder and Stanford 2001). The Yakima River system historically produced robust annual runs of Chinook (*Oncorhynchus tshawytscha*), sockeye (*Oncorhynchus nerka*), and coho (*Oncorhynchus kisutch*) salmon and steelhead (*Oncorhynchus mykiss*).

Although substantial floodplain modifications have occurred, the combination of water availability, river energy, and sufficient sediment sources have made the Gap to Gap Reach one of the highest restoration priorities in the Yakima River Basin. A significant amount of habitat remains in the Gap to Gap Reach because of habitat-structuring floods that still occur in the remaining expanses of the floodplain environment as flood flows maintain the existing shifting habitat mosaic. Additionally, the relatively large amount of sediment brought to the Yakima River by the Naches River led Stanford et al. (2002) to conclude that the Gap to Gap Reach is one of the more fluvially active reaches in the Yakima River Basin, with the highest potential for restoration of all the Yakima River reaches that were evaluated in the Stanford study.

Levee setback and floodplain restoration, combined with the high energy erosion and deposition processes that occur during high flows, can create a mosaic of floodplain habitats within the Gap to Gap Reach that will create high production, off-channel habitat for juvenile salmonids and provide other habitat niches for a large number of species across many life history stages. Many floodplain improvements have already been made and significant potential remains for further reconnecting floodplain throughout the Gap to Gap Reach.

2.4 Related Plans and Policies

Plan projects are consistent with policies and recommendations that are included in other planning documents prepared for the region. This section provides a brief description of the related plans that have been developed for various flood hazard management and fish habitat restoration planning efforts in the region.

2.4.1 1999 Yakima Basin Water Conservation Plan

In 1994, Congress passed the YRBWEP Phase II, which authorizes Reclamation to evaluate and implement various measures to improve water management in the Yakima River Basin to protect, mitigate, and enhance fish and wildlife and improve the reliability of irrigation water supply (1994). The Yakima River Basin Water Conservation Program, a primary component of YRBWEP Phase II, is a voluntary program structured to provide economic incentives with cooperative federal, state, and local funding to stimulate the identification and implementation of structural and nonstructural agricultural water conservation measures in the Yakima River Basin.

The Yakima Basin Conservation Plan, prepared by the Yakima River Basin Conservation Advisory Group (1998), was submitted to the Secretary of the Interior in 1998 and published and distributed in October 1999. The Conservation Plan sets forth the mechanism for implementing water conservation measures, including eligibility requirements for federal- and state-sponsored grants, and the recommendation to acquire floodplain properties to improve habitat and mitigate for loss of wetlands habitats, which might occur as a result of water conservation projects in the Yakima Basin. Since the Conservation Plan was completed, floodplain properties have been acquired in the Gap to Gap Reach, providing the needed real estate for the flood hazard reduction and floodplain restoration projects proposed for this area.

2.4.2 2007 Upper Yakima Comprehensive Flood Hazard Management Plan

The 2007 Upper Yakima CFHMP (as updated from the 1998 CFHMP) is a policy document that contains recommended actions or policy changes to comprehensively reduce flood hazards in the Yakima River from the Yakima County northern boundary to Union Gap and along the Naches River from Twin Bridges on SR 12 to the mouth of the Naches. County adoption of the CFHMP fulfilled one of the main requirements for eligibility for state funding under the Flood Control Assistance Account Program (FCAAP), and federal funding from FEMA.

One of the major recommendations of the 1998 CFHMP was the establishment of a FCZD to oversee implementation of the Upper Yakima CFHMP, and preparation of other CFHMPs

throughout the County. The FCZD was established in 1999 as an independent taxing district in Revised Code of Washington (RCW) 86.15. Revenue collected by the FCZD has been used to establish an emergency fund for flood control in Yakima County. FCZD funding will be used to partially support some of the projects identified in the Gap to Gap Plan.

2.4.3 2009 Yakima Steelhead Recovery Plan

The 2009 Yakima Steelhead Recovery Plan (YBFWRB 2009) is a recovery plan that was prepared to address the recovery of Endangered Species Act (ESA)-listed Middle Columbia steelhead Evolutionary Significant Unit that are known to spawn in the Yakima Basin. The 2009 plan builds upon the 2005 Yakima Subbasin Salmon Recovery Plan (Freudenthal et. al 2005). The ESA requires development of recovery plans that review a listed species' status, set recovery goals, and identify actions required to recover the species and remove it from the list. Recovery plans are non-regulatory documents that provide guidance on how to recover a species; they do not create any binding commitments or legal mandates.

Projects proposed under the Gap to Gap Plan to reconnect floodplains would address the recommended actions identified in the 2009 Yakima Steelhead Recovery Plan to restore mainstream rearing and floodplain habitat in the Gap to Gap Reach. Funding for portions of the Gap to Gap Plan are also anticipated from the Federal Pacific Coast Salmon Recovery Fund (PCSRF), which is overseen by the Washington State Recreation and Conservation Office (RCO) Salmon Recovery Funding Board (SRFB).

2.4.4 2011 Yakima Basin Integrated Water Resource Management Plan

In June 2009, the Washington State Department of Ecology (Ecology) and Reclamation brought representatives from the Yakama Nation, irrigation districts, environmental organizations, and federal, state, county, and city governments together to form the YRBWEP Work Group to help develop a consensus-based solution to the basin's water problems. This effort was built upon 30 years of prior planning and feasibility studies and environmental reviews conducted by the state and Reclamation, often in joint efforts.

The YBIP (Reclamation and Ecology 2011) was developed by the YRBWEP Work Group and includes a set of actions to address water resource and ecosystem needs including fish passage

at existing dams and reservoirs, habitat and watershed protection and restoration, structural and operational changes to the Yakima federal irrigation project operated by Reclamation, surface water storage, groundwater storage, enhanced water conservation, and market reallocation of existing water rights. Related to mainstem Yakima River floodplain habitat restoration, the YBIP recommends implementation of key strategies identified in the Yakima Subbasin Plan (YBFWRB 2004), and completion of most of the actions described in the Yakima Steelhead Recovery Plan (YBFWRB 2009), including channel and habitat restoration in the Yakima River in the Gap to Gap Reach. State funding was approved in 2013 (Engrossed Substitute Senate Bill [ESSB] 5035) for the July 1, 2013, to June 30, 2015 state biennium to support several YBIP actions, including restoration measures in the Gap to Gap Reach. Federal authority and funding for Reclamation is being pursued by basin interests to further support Gap to Gap restoration measures and other YBIP actions.

3 GAP TO GAP PLAN PROJECTS

This section describes the Projects included in the Gap to Gap Plan, as well as past, present, and foreseeably future actions (e.g., cumulative actions) to be addressed as part of the NEPA and SEPA documentation that will be required for implementation.

3.1 Purpose and Need

The Gap to Gap Reach floodplain and ecosystem are significantly degraded and impacted by infrastructure on the floodplain, and by numerous floodplain gravel mining pits in the vicinity. The capacity for the Yakima River to convey flood waters has been reduced by the construction of levees and the continual aggradation and sediment deposition within the reach. The purpose of the Plan is to improve and restore ecosystem habitat and function by setting back levees in the Gap to Gap Reach and restoring channel floodplain connectivity and reduce flood hazards while maintaining a 100-year level of flood protection to protect human health and life, and infrastructure.

3.2 Plan Projects

The Plan contains the most significant structural recommendations from the 1998 CFHMP and the 2007 Upper Yakima CFHMP update, including several projects in the reach designed to address flood protection, floodplain restoration, and levee maintenance/failure issues. These Plan projects also address fish habitat restoration goals set forth in the 2009 Yakima Steelhead Recovery Plan and the goals set forth in the YBIP.

The following projects are included in the Plan and would undergo NEPA and/or SEPA environmental analysis as described in Section 4:

1. Federal project levee setback at Nob Hill
2. East Bank DID #1 levee setback south of SR 24
3. Blue Slough Hydrologic, Habitat, and Fish Access Improvements
4. Federal project levee setback upstream of Terrace Heights bridge
5. Federal project levee setback at Victory Lane
6. City of Yakima WWTP outfall reconfiguration

7. Greenway Trail Phases 2 and 3
8. O&M Activities

Past, present, and reasonably foreseeable future actions will be considered as part of the cumulative effects analysis in the NEPA environmental analysis to be conducted for the Plan. Table 1 provides a summary of the Plan projects, potential implementing agencies and associated funding sources, and anticipated environmental approvals. Figure 7 provides a map of the Plan projects and Figure 8 shows the Plan projects and their spatial relation to cumulative actions. A description of Plan projects is provided in Section 3.3.

In implementing the projects of the Plan, it should be recognized that the potential exists for additional emergency actions to arise in risk areas that have experienced repeated levee failure. The environmental review process will address the relationship between planned and potential future emergency response measures that might occur during Plan implementation.

Table 1

Proposed Plan Projects

No.	Project	Implementing Agency(s)	Potential Funding Source(s)	Anticipated Approval(s)		
				Jurisdiction	Compliance/Approval(s)	Applicable Agency/ Organization
PLAN PROJECTS (Construction)						
1	Federal Project Levee Setback at Nob Hill	County USACE WSDOT City of Yakima Yakima Greenway	USACE Section 1135 YRBWEP (Reclamation and Ecology) Ecology FCAAP RCO/SRFB FCZD	Environmental Compliance	NEPA EA/FONSI[1] ESA Section 7 MSA EFH F&W Coordination Act NHPA Section 106 CAA and Noise Control Act Clean Water Act Flood Protection (LOMR/CLOMR)	USACE USFWS/NOAA NOAA-NMFS USFWS DAHP USACE USACE FEMA
				Federal Permits and Approvals	Section 10/404 (issued by USACE under NEPA EA process)	USACE
				State Permits and Approvals	NPDES Construction Stormwater WDNR Aquatic Lands AUA WSDOT Real Estate Permit	WDFW Ecology WDNR WSDOT
				Local Permits and Approvals	Interlocal Agreement for trail maintenance and closure	Yakima Greenway

No.	Project	Implementing Agency(s)	Potential Funding Source(s)	Anticipated Approval(s)		
				Jurisdiction	Compliance/Approval(s)	Applicable Agency/ Organization
2	East Bank DID #1 Levee Setback South of SR 24	County USACE Reclamation Ecology USFWS WSDOT	USACE Section 1135 YRBWEP (Reclamation and Ecology) FCZD RCO/SRFB YRBWEP Phase II KGH Water Right Mitigation Ecology FCAAP	Environmental Compliance	NEPA EA/FONSI[1] ESA Section 7 MSA EFH F&W Coordination Act NHPA Section 106 CAA and Noise Control Act Clean Water Act Flood Protection (LOMR/CLOMR)	USACE USFWS/NOAA NOAA-NMFS USFWS DAHP USACE USACE FEMA
				Federal Permits and Approvals	Section 10/404 (issued by USACE under NEPA EA process) Real Estate Agreement	USACE Reclamation
				State Permits and Approvals	NPDES Construction Stormwater DNR Aquatic Lands AUA WSDOT Real Estate Permit	WDFW Ecology WDNR WSDOT
				Local Permits and Approvals	Levee easement through Central Premix property (300 feet west of riverside road and east of Blue Slough)	Central Premix

No.	Project	Implementing Agency(s)	Potential Funding Source(s)	Anticipated Approval(s)		
				Jurisdiction	Compliance/Approval(s)	Applicable Agency/ Organization
3	Blue Slough Hydrologic, Habitat, and Fish Access Improvements	County USACE Reclamation Ecology USFWS WDFW WSDOT	USACE Section 1135 YRBWEP (Reclamation and Ecology) FCZD RCO/SRFB YRBWEP Phase II KGH Water Right Mitigation Ecology FCAAP	Environmental Compliance	NEPA EA/FONSI[1] ESA Section 7 MSA EFH F&W Coordination Act NHPA Section 106 CAA and Noise Control Act Clean Water Act Flood Protection (LOMR/CLOMR)	USACE USFWS/NOAA NOAA-NMFS USFWS DAHP USACE USACE FEMA
				Federal Permits and Approvals	Section 10/404 (issued by USACE under NEPA EA process) Real Estate Agreement	USACE Reclamation
				State Permits and Approvals	NPDES Construction Stormwater DNR Aquatic Lands AUA WSDOT Real Estate Permit	WDFW Ecology WDNR WSDOT
				Local Permits and Approvals	Land use and shoreline permits Levee easement through Central Premix property (300 feet west of riverside road and east of Blue Slough)	County Central Premix

No.	Project	Implementing Agency(s)	Potential Funding Source(s)	Anticipated Approval(s)		
				Jurisdiction	Compliance/Approval(s)	Applicable Agency/ Organization
4	Federal Project Levee Setback Upstream of Terrace Heights bridge	County USACE Reclamation Ecology USFWS WSDOT (land interest)	USACE YRBWEP (Reclamation and Ecology) FHWA FCZD	Environmental Compliance	NEPA EA/FONSI[2] ESA Section 7 MSA EFH F&W Coordination Act NHPA Section 106 CAA and Noise Control Act Clean Water Act Flood Protection (LOMR/CLOMR)	USACE USFWS/NOAA NOAA-NMFS USFWS DAHP USACE USACE FEMA
				Federal Permits and Approvals	Section 10/404 Section 408	USACE
				State Permits and Approvals	HPA NPDES Construction Stormwater DNR Aquatic Lands AUA WSDOT Real Estate Permit	WDFW Ecology WDNR WSDOT
				Local Permits and Approvals	Land use and shoreline permits	County

No.	Project	Implementing Agency(s)	Potential Funding Source(s)	Anticipated Approval(s)		
				Jurisdiction	Compliance/Approval(s)	Applicable Agency/ Organization
5	Federal Project Levee Setback at Victory Lane	County USACE Reclamation WS Parks (land interest/levee easements)	USACE YRBWEP (Reclamation and Ecology) WWRP FCZD	Environmental Compliance	NEPA EA/FONSI[2] ESA Section 7 MSA EFH F&W Coordination Act NHPA Section 106 CAA and Noise Control Act Clean Water Act Flood Protection (LOMR/CLOMR)	USACE USFWS/NOAA NOAA-NMFS USFWS DAHP USACE USACE FEMA
				Federal Permits and Approvals	Section 10/404 Section 408	USACE
				State Permits and Approvals	HPA NPDES Construction Stormwater DNR Aquatic Lands AUA WSDOT Real Estate Permit	WDFW Ecology WDNR WSDOT
				Local Permits and Approvals	Land use and shoreline permits	County

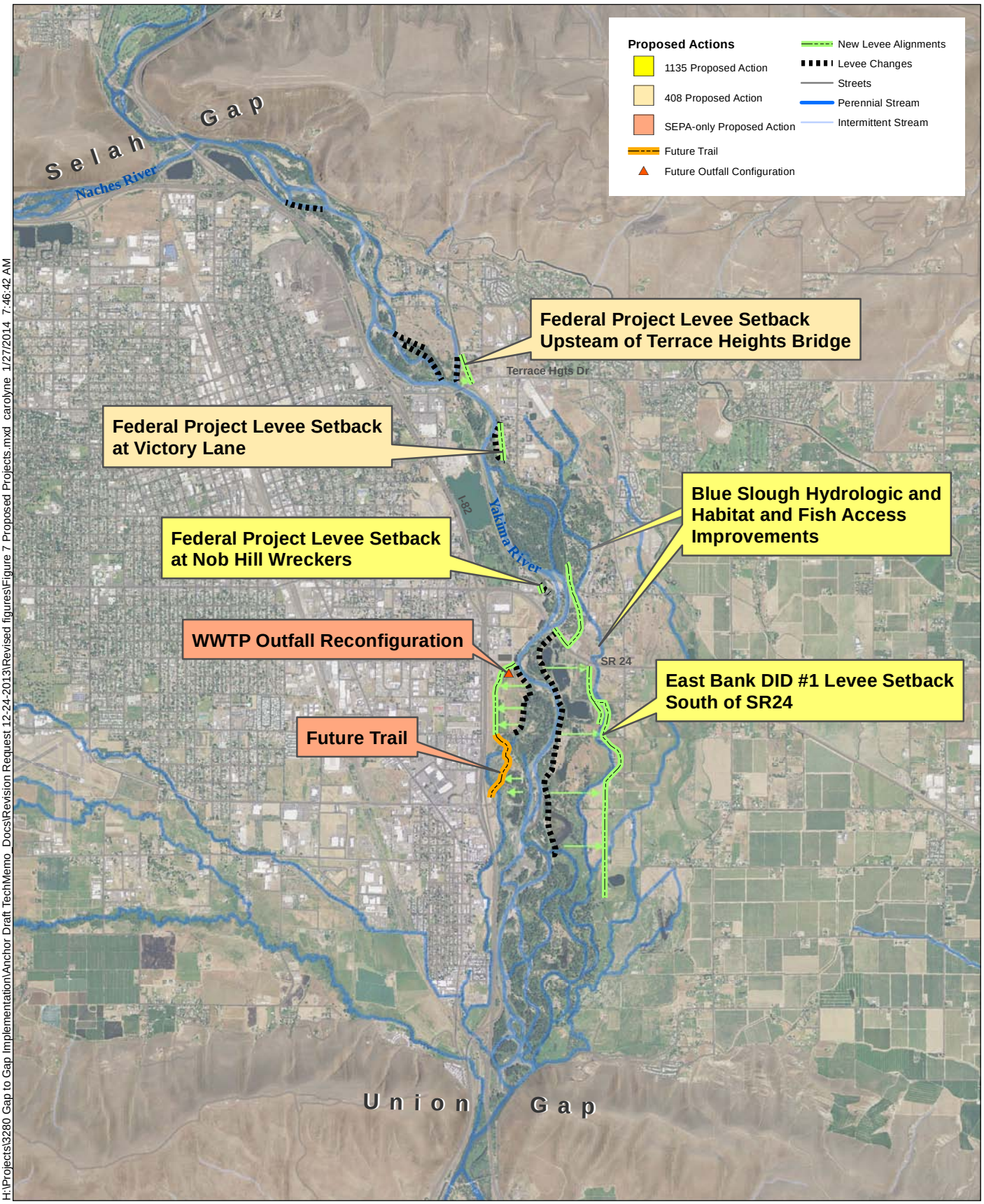
No.	Project	Implementing Agency(s)	Potential Funding Source(s)	Anticipated Approval(s)		
				Jurisdiction	Compliance/Approval(s)	Applicable Agency/ Organization
6	City of Yakima WWTP Outfall Reconfiguration (City of Yakima 2013)	City of Yakima Ecology County	YRBWEP (Reclamation and Ecology) City of Yakima RCO/SRFB USFWS Ecology WA State Aquatic Lands Enhancement Account County	Environmental Compliance	SEPA ESA Section 7 MSA EFH F&W Coordination Act NHPA Section 106 CAA and Noise Control Act Clean Water Act Flood Protection (LOMR/CLOMR)	City of Yakima USFWS/NOAA NOAA-NMFS USFWS DAHP USACE USACE FEMA
				Federal Permits and Approvals	Section 10/404	USACE
				State Permits and Approvals	HPA NPDES Construction Stormwater DNR Aquatic Lands AUA WSDOT Real Estate Permit	WDFW Ecology WDNR WSDOT
				Local Permits and Approvals	Land use and shoreline permits	City of Yakima

No.	Project	Implementing Agency(s)	Potential Funding Source(s)	Anticipated Approval(s)		
				Jurisdiction	Compliance/Approval(s)	Applicable Agency/ Organization
7	Greenway Trail Phases 2 and 3	County RCO City of Yakima City of Union Gap	County City of Yakima RCO/SRFB	Environmental Compliance	SEPA Checklist; MDNS ESA Section 7 Compliance MSA EFH Compliance NHPA Section 106 Compliance FEMA Flood Protection	County USFWS/NOAA NOAA-NMFS DAHP FEMA
				Federal Permits and Approvals	Section 10/404	USACE
				State Permits and Approvals	401 Water Quality Certification HPA NPDES Construction Stormwater	Ecology WDFW Ecology
				Local Permits and Approvals	Land use and shoreline permits	City of Yakima City of Union Gap
PLAN PROJECTS (O&M)						
8	O&M Activities	Depends on Specific O&M Activities/ Facilities Involved	County City of Yakima Others	TBD		

Notes:
1. An EA has been assumed as the appropriate level of environmental review documentation. USACE still needs to officially confirm this assumption. If an EA is confirmed as appropriate, then it is anticipated that an integrated feasibility and environmental review document would be prepared to satisfy Section 1135 requirements. Requirements from other participating agencies may also need to be met with this combined document.
2. Environmental review document to satisfy Section 408

Abbreviations and Acronyms:
AUA = Aquatic Use Authorization
CAA = Clean Air Act
County = Yakima County
DAHP = Department of Archaeology and Historic Preservation
DID = Diking Improvement District
EA = Environmental Assessment
Ecology = Washington State Department of Ecology
EFH = Essential Fish Habitat
ESA = Endangered Species Act

FCAAP = Flood Control Assistance Account Program
FCZD = Flood Control Zone District
FEMA = Federal Emergency Management Agency
FHWA = Federal Highway Administration
FONSI = Finding Of No Significant Impact
HPA = Hydraulic Permit Approval
KGH – Kennewick General Hospital
LOMR/CLOMR = Letter of Map Revision/Conditional Letter of Map Revision
MDNS = Mitigated Determination of Non-Significance
MSA = Magnuson-Stevens Fishery Conservation and Management Act
NHPA = National Historic Preservation Act
NMFS = National Marine Fisheries Service
NOAA = National Oceanic and Atmospheric Administration
NPDES = National Pollutant Discharge Elimination System
O&M = Operations and Maintenance
RCO = Recreation and Conservation Office
Reclamation = U.S. Bureau of Reclamation
SEPA = State Environmental Policy Act
SRFB = Salmon Recovery Funding Board
USACE = U.S. Army Corps of Engineers
USFWS = U.S. Fish and Wildlife Service
WDFW = Washington State Department of Fish and Wildlife
WDNR = Washington State Department of Natural Resources
WSDOT = Washington State Department of Transportation
WWRP = Washington Wildlife and Recreation Program
WWTP = Wastewater Treatment Plant
YRBWEP = Yakima River Basin Water Enhancement Project



H:\Projects\3280 Gap to Gap Implementation\Anchor Draft TechMemo_Docs\Revision Request 12-24-2013\Revised figures\Figure 7 Proposed Projects.mxd carolyne 1/27/2014 7:46:42 AM

Yakima County GIS

Feet
0 3,000 6,000

Figure 7
Proposed Actions
Gap to Gap Floodplain Restoration and Enhancement Plan
Technical Memorandum

3.3 Description of Plan Projects

3.3.1 Federal Project Levee Setback at Nob Hill

The federal project levee setback at Nob Hill includes the following construction activities:

- County acquisition of 1.2 acres of land (Nob Hill Wreckers property)
- Set back 500 linear feet of the most downstream portion of the federal project levee
- Removal of the old SR 24 bridge abutment and road prism approximately 300 feet landward to reduce erosion and to improve conveyance under the new SR 24 bridge (WSDOT owns this structure)
- Relocation of the existing trail to the west of the proposed levee setback to follow the levee setback alignment (the trail may also need to be elevated and moved westward from the southern end of the new levee alignment down to and underneath the SR 24 bridge)

This project is anticipated to be completed in 2015 pending the schedule for environmental approvals. O&M activities include trail maintenance, channel maintenance, and potential structural management measures (e.g., engineered log jams) to address summer Chinook spawning in areas that may be dewatered at the end of the irrigation season as part of an adaptive management program.

3.3.2 East Bank DID #1 Levee Setback South of SR 24

The East Bank DID #1 Levee Setback South of SR 24 project includes the following construction activities:

- Remove the existing east bank DID #1 levee south of SR 24 downstream to Union Gap and establish a new levee farther east. This setback will return 700 acres directly to the active floodplain and increase access to another 1,500 acres of floodplain located immediately downstream of the proposed levee terminus. Associated activities include filling some of the water-filled gravel pits with spoils from the levee removal. This may necessitate construction of an additional pond, which would receive water from ongoing gravel mining operations.
- Construct three temporary levees between the current levee location and the new setback location.

- Move existing structures, equipment, and other material between the existing and new levee alignment.
- Revegetate the relocated levee with native plants such as sagebrush (*Artemisia tridentate*) and bunchgrass.

Two options will be considered as part of this project to determine how far south of SR 24 the DID #1 levee setback would extend, along with the associated level of flood protections achieved by the two options. The extent of the new levee could be nearly as long as the existing levee, or be reduced in length by a quarter mile or more. Both options would be evaluated to assess their impacts to flood protection, floodplain certification, and land use.

3.3.3 Blue Slough Hydrologic, Habitat, and Fish Access Improvements

The Blue Slough Hydrologic, Habitat, and Fish Access Improvements project is related to the East Bank DID #1 Levee Setback and would require the following activities:

- Restore Blue Slough area affected by the East Bank DID #1 levee setback by improving the connection to the river, removing flow constrictions, and providing a more natural hydrograph and aquatic habitat.
- Reconstruct and automate the Blue Slough headgate to restore a more natural hydrograph flow into the slough over a wider range of river flow conditions.

O&M activities include channel maintenance, management of beaver activity, and headgate maintenance at Blue Slough.

3.3.4 Federal Project Levee Setback Upstream of Terrace Heights Bridge

This project includes the following construction activities:

- Acquisitions of land on the east bank immediately upstream of the Terrace Heights bridge
- Setback of the federal project levee (east bank of Roza Wasteway) to improve floodplain flow conveyance capacity and reduce erosion with an improved river angle in relation to the Terrace Heights bridge

- Shortening of the Roza Wasteway operated by Reclamation and removing the existing adult fish passage screen (the fish screen would either be relocated or replaced by a new fish screen at the end of the shortened Reclamation/Roza Wasteway)

Other changes may be necessary to maintain flow conveyance capacity during floods, including elevation modifications to the existing wasteway channel berms and modifications in road elevations at the Roza Wasteway bridge crossing to the north.

Funding for this project has not been secured. O&M activities include channel maintenance, cutting pilot channels upstream of SR 24 for habitat and flood hazard reduction, and other potential measures.

3.3.5 Federal Project Levee Setback at Victory Lane

This project includes the following construction activities:

- Set back of approximately 1,700 feet of the federal project levee from the existing location to an area approximately parallel to Victory Lane to reduce erosion, avulsion, and seepage risks
- Removal of other equipment and material in the area

Funding for this project has not been secured. O&M activities are expected to be limited to road maintenance on top of the relocated levee. Additional activities may emerge as the river channel adjusts to the new channel alignment.

3.3.6 City of Yakima WWTP Outfall Reconfiguration

The City of Yakima WWTP Outfall Reconfiguration project includes the following construction activities:

- Relocate the existing City of Yakima WWTP outfall downstream and west of the current location, and remove approximately 2,000 feet of armored revetment to allow floodplain reconnection south of the existing WWTP. The proposed outfall will consist of a series of subsurface and daylighted channels to convey treated wastewater

to the Yakima River. The conveyance system would include re-connection of a pond (commonly referred to as Billy's Pond) with spring-fed channels and wetlands.
- Relocate trail immediately south of the SR 24 bridge.
- Remove associated culvert(s), re-vegetate the reconnected floodplain, and place wood habitat structures.

This project is anticipated to be completed in 2014 to 2015, pending the schedule for environmental approvals. This project must be completed before the DID #1 levee project can occur. O&M activities include trail maintenance, channel, and substrate maintenance every 10 to 15 years, and potential structural management measures (e.g., engineered log jam) to address summer Chinook spawning in areas that may be dewatered at the end of the irrigation season, as part of an adaptive management program. Levee setback immediately south of the SR 24 may also occur in the future, and will be further evaluated in the future.

3.3.7 Greenway Trail Phases 2 and 3

The Greenway Trail Phases 2 and 3 project includes the following:

- Relocation of the trail from its current alignment to an alignment farther west of the Yakima River Greenway Trail alignment, which is associated with the City of Yakima WWTP project

Funding for this project has not been secured. Trail maintenance will be performed on the new trail, once constructed.

3.3.8 O&M Activities

O&M activities would be undertaken for each project as generally described in the previous sections.

4 NEPA/SEPA APPROACH

This section describes the approach for grouping the Plan projects described in Section 3 into "proposed actions" that would be implemented under separate NEPA and SEPA environmental reviews. The proposed approach for grouping projects and meeting NEPA and SEPA requirements is based on multiple factors, including potential implementation funding sources and timing of availability, authorities for the project, and anticipated required federal, state, and local approvals sought. The funding opportunities and environmental review compliance strategies have evolved since adoption of the CFHMP, and various associated emergency projects and other restoration measures identified therein have been completed.

Because many of the CFHMP projects and restoration measures have occurred, the remaining Plan projects and the associated scale of these projects are no longer of the magnitude that would require additional congressional funding authorization. The scale of the remaining projects now falls within the requirements and constraints of USACE and other federal, state, and local funding authorities or in-kind contributions.

4.1 Proposed Actions

The Plan projects have been grouped into three proposed actions for NEPA and SEPA compliance as indicated in Table 2. O&M projects are anticipated to be included in both Sections 1135 and 408 NEPA reviews.

Table 2
Plan Projects and Proposed Actions

Proposed Action	NEPA/SEPA Compliance	Plan Projects
1	Section 1135 NEPA SEPA Review	Federal project levee setback at Nob Hill
		East Bank DID #1 levee setback south of SR 24
		Blue Slough Hydrologic, Habitat, and Fish Access Improvements
		O&M projects

Proposed Action	NEPA/SEPA Compliance	Plan Projects
2	Section 408 NEPA SEPA Review	Federal project levee setback upstream of Terrace Heights bridge
		Federal project levee setback at Victory Lane
		O&M projects
3	City led NEPA-compliance SEPA Review	City of Yakima WWTP outfall reconfiguration
		Greenway Trail Phases 2 and 3

4.2 Phasing of the Plan Projects

A depiction of how the construction projects could be phased or sequenced is described below, recognizing additional evaluation of effects and relationships among projects is needed, along with coordination with WSDOT, City of Yakima, Reclamation, and other landowners in the Plan area. Phasing of projects described in this section includes consideration of cumulative actions, which are discussed in Section 5.2. Phasing of O&M activities will be updated based upon the information resulting from these activities.

The projects that comprise the Plan along with cumulative actions described in Section 5.2 in the Plan area would occur generally in the following sequence pending the schedule for environmental approvals, as required for each project:

1. Sportsman Park Island Channels Restoration (anticipated completion in 2014)
2. Greenway Trail and City Levee Relocation (anticipated completion in 2014)
3. Greenway Trail Phases 2 and 3 (anticipated completion in 2014 to 2015)
4. Federal Project Levee Setback at Nob Hill (anticipated completion in 2015)
5. City of Yakima WWTP Reconfiguration (anticipated completion in 2014 to 2015)
6. East Bank DID #1 levee setback south of SR 24 (anticipated completion in 2016 to 2017)
7. Blue Slough Hydrologic, Habitat, and Fish Access Improvements (funding for this project has not been secured)
8. Terrace Heights Bridge/Road Improvements (funding for this project has not been secured)

9. Federal Project Levee Setback Upstream of Terrace Heights Bridge (funding for this project has not been secured)
10. Federal Project Levee Setback at Victory Lane (funding for this project has not been secured)
11. O&M projects, as needed (ongoing)

4.3 NEPA Compliance Approach

4.3.1 Section 1135 and Section 408 NEPA Review

As stated in Section 2.1, the County is seeking funding and technical support from USACE under Section 1135 of the WRDA, along with associated approvals for modifications to the federal levees under Section 408 of the Rivers and Harbors Act. NEPA compliance for the proposed actions to be addressed under these two USACE authorities will likely be approached through the preparation of separate NEPA documents, with the Section 1135 environmental review likely occurring first. USACE has determined that initially, a NEPA EA would likely be appropriate for the Section 1135 proposed action (Floyd 2013).

The Section 1135 proposed action includes activities that would require NEPA review for Section 1135 funding but would not require Section 408 project approvals, with the one possible exception being the Nob Hill levee modifications (follow-up discussions on this topic are planned with USACE in early 2014).

Section 1135 is conducted in two main phases. The feasibility and environmental compliance phase includes problem identification, formulation, and evaluation of alternatives to address the problem, and if appropriate, a recommendation for a restoration plan. The product of the feasibility and environmental compliance phase is a detailed project report and integrated EA that is submitted for review and approval through the established USACE review and approval process. The second phase is the detailed design and implementation of the recommended plan.

The Section 408 proposed action includes activities proposing changes to federal project levees that would require Section 408 project approval. NEPA compliance is expected to be addressed through a Section 408-specific environmental review process. Proposed actions

that include the federal project levees beyond O&M activities would undergo a Section 408 review and evaluation process. The nature and extent of this review has yet to be determined. This evaluation process includes submittal of technical data regarding impacts of the proposed alteration to flood conveyance, structural integrity, O&M, flood protection capabilities, construction plans and specifications, and additional supplemental information as required. The major Section 408 technical evaluation data and NEPA compliance data can be integrated into one decision document.

See Table 3 for summary of USACE authorities under the two proposed NEPA reviews.

Table 3
NEPA Compliance Documents for Plan Projects

Proposed Action	NEPA Compliance	Plan Projects	Section 1135 Funding?	Federal Project Levee?	Section 408 Approval Required?
1	Section 1135 NEPA	Federal project levee setback at Nob Hill	Yes	Yes	Under consideration
		East Bank DID #1 levee setback south of SR 24	Yes	No	No
		Blue Slough Hydrologic, Habitat, and Fish Access Improvements	Yes	No	No
		O&M projects	No	Potentially	No
2	Section 408 NEPA	Federal project levee setback upstream of Terrace Heights bridge	Yes	Yes	Yes
		Federal project levee setback at Victory Lane	Yes	Yes	Yes
		O&M projects	No	Potentially	No

4.3.2 NEPA Review under Other Authorities

As identified in Table 1, federal funding and/or real estate agreements will be sought from include Reclamation and WSDOT. Reclamation is required to complete a NEPA evaluation for any action it might take including the distribution of funds. Reclamation could conduct their own NEPA evaluation and either adopt one or both of the USACE NEPA documents, or

incorporate applicable sections by reference, as applicable. Other federal approvals for permits or other activities might also require separate NEPA evaluations.

Federal, state, and local agencies and the Yakama Nation can also seek co-lead or cooperative agency status for one or both of the USACE NEPA environmental reviews described previously.

4.4 SEPA Compliance Approach

SEPA review is anticipated for all projects in the Plan, including those projects that would be included in the Section 1135 and Section 408 proposed actions, and the remaining projects, including the City of Yakima WWTP Outfall Reconfiguration, and construction of the Greenway Trail Phases 2 and 3. Federal approvals and associated environmental reviews, as applicable, for the City's WWTP Outfall Reconfiguration will be completed through a separate process being led by the City. Federal funding or approval is not anticipated for the Greenway Trail Phases 2 and 3 project. Based on current understanding of the projects and anticipated environmental effects, SEPA review for all of the Plan projects can likely be addressed through one or more SEPA checklists with an associated determination of non-significance or mitigated determination of non-significance. The final decision of appropriate SEPA review documentation (checklist or environmental impact statement) will depend on SEPA review comments received during scoping and the results from conducting the environmental analysis for the projects. SEPA documentation should reference and incorporate the SEPA review previously conducted for the Upper Yakima CFHMP and also the Section 1135 and Section 408 NEPA review documents, as available.

5 SECTION 1135 NEPA REVIEW

Consistent with the understanding that the Section 1135 environmental review process will be the first NEPA review process to be initiated, preliminary alternatives have been identified. A work plan has also been developed that will provide the basis for preparing the Section 1135 draft and final environmental review document (see Appendix A – NEPA/SEPA Work Plan for more details). Additionally, Appendix B includes the proposed NEPA EA outline, which has been developed based on input from the USACE for compliance with Section 1135 of the WRDA.

5.1 Preliminary Section 1135 NEPA Alternatives

The preliminary alternatives include the following:

- No Action
- Repair In Kind
- Partial Implementation of Section 1135 Projects
- Full Implementation of Section 1135 Projects

These preliminary alternatives would be refined in consultation with USACE during development of the Section 1135 NEPA documentation.

5.1.1 No Action

No levee repairs would be completed. Maintenance and emergency repairs to the levees would continue as needed.

5.1.2 Repair in Kind

This alternative repairs the levees by returning them to a 100-year flood protection condition with minimal change to the character, scope, or size of the levee. This alternative maintains the status quo of the river and levee at the repair location as existed prior to flood damage.

5.1.3 Partial Implementation of 1135 Funded Plan Projects

This alternative would include partial implementation of Plan projects with some projects, such as the Blue Slough Hydrologic, Habitat, and Fish Access Improvements or others, not being implemented based on available funding, real estate, or other factors. It could also include only a portion of levee set back and reconstruction that may or may not lead to achieving a 100-year level of flood protection.

5.1.4 Full Implementation of 1135 Funded Plan Projects

This alternative includes full implementation of all Plan projects including improvements to restore ecosystem habitat and functions, and maintaining flood protection with levee setbacks. Levees will be set back and reconstructed to achieve a 100-year level of flood protection.

5.2 Description of Identified Cumulative Actions

Actions that will be considered as part of the cumulative effects analysis in Section 1135 NEPA environmental analysis are identified in Table 4, and include past, present, and reasonably foreseeable future actions[1]. Figure 8 identifies the Section 1135 proposed actions and pending cumulative actions. Please refer to Figure 4 for a summary of past actions that have occurred in the plan area. A brief description of each cumulative action is provided below.

[1] Cumulative actions for the Section 1135 NEPA document would include the Plan projects under proposed Actions 2 and 3 (see Table 2).

Table 4

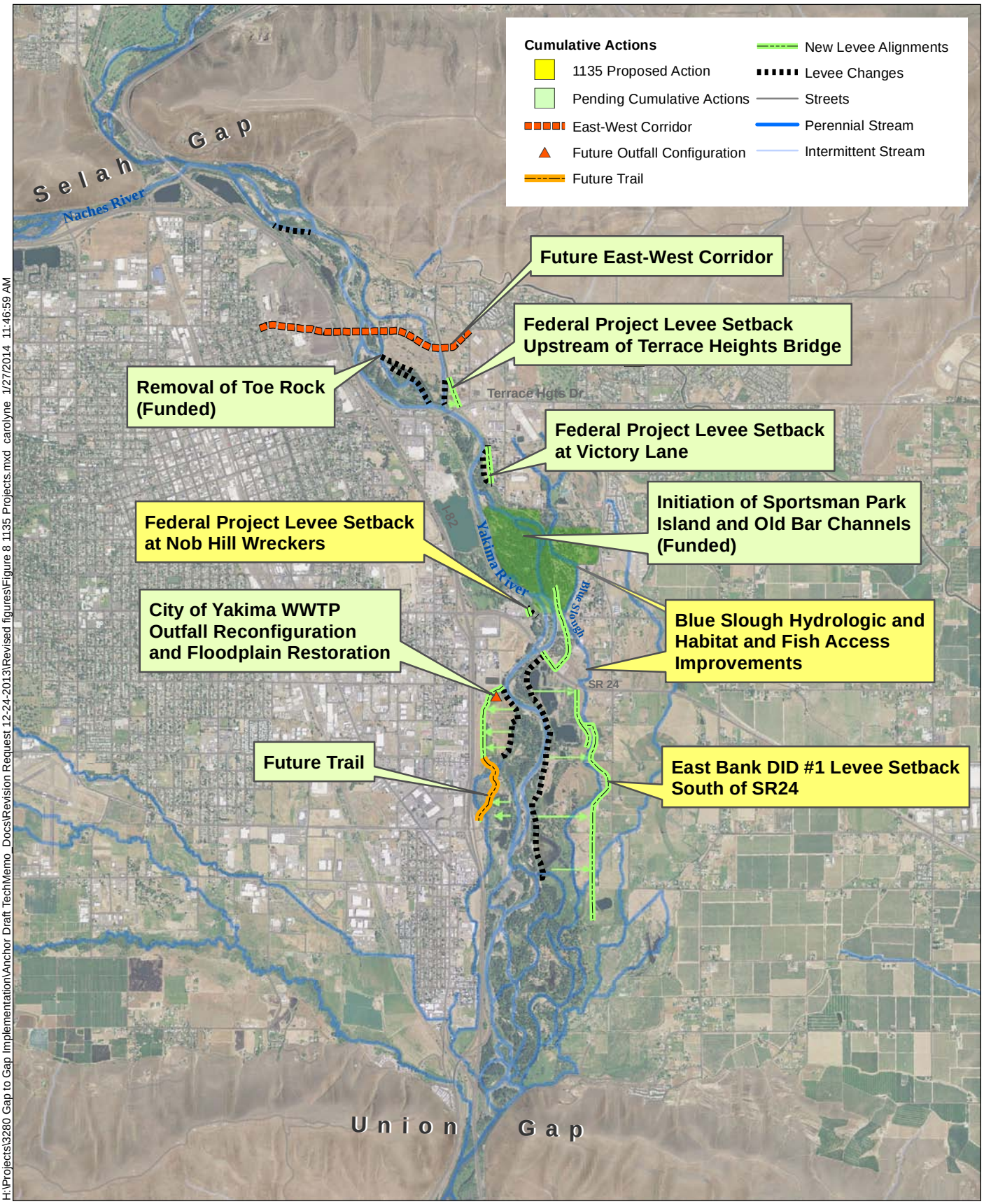
Cumulative Actions: Past, Present, and Reasonably Foreseeable Future Actions

No.	Action	Implementing Agency(s)	Potential Funding Source(s)	Status
Completed Actions				
1	SR 24 Bridge Replacement	WSDOT FHWA	WSDOT	Complete
2	Emergency KOA Campground Federal Levee Setback	USACE Reclamation County	USACE YRBWEP/Ecology FCZD	Complete
3	Floodplain Land Acquisition	Reclamation	Reclamation	Complete
4	Greenway Trail and City of Yakima Levee Relocation	City of Yakima County WSDOT	SRFB RCO/Centennial County	Complete
5	Levee Armoring Repair	USACE	PL 84-99 Program	Complete
6	Interior Levee Breaching (Boise Cascade Levee)	County	FEMA	Complete
7	Interior Levee Removal Upstream of Terrace Heights	County USACE	PL 84-99 Program	Complete
8	Seepage and Erosion Repairs (2010 – 2012)	USACE County	PL 84-99 Program	Complete
In Progress or Pending Actions				
9	Federal Project Levee Setback Upstream of Terrace Heights bridge	County USACE Reclamation Ecology USFWS WSDOT (land interest)	USACE YRBWEP (Reclamation and Ecology) FHWA FCZD	TBD
10	Federal Project Levee Setback at Victory Lane	County USACE Reclamation WS Parks (land interest/levee easements)	USACE YRBWEP (Reclamation and Ecology) WWRP FCZD	TBD

No.	Action	Implementing Agency(s)	Potential Funding Source(s)	Status
11	Sportsman Park Island Channels Restoration	County RCO	SRFB WWRP FCZD	In Progress (Funded) Environmental compliance in process for federal, state and local permits, as applicable
12	City of Yakima WWTP Outfall Relocation/ Reconfiguration	City of Yakima County WSDOT Ecology	SRFB RCO/Centennial Ecology YRBWEP (Reclamation and Ecology)	In Progress (Funded) Environmental compliance in process for federal, state and local permits
13	Greenway Trail Phases 2 and 3	County RCO City of Yakima City of Union Gap	County City of Yakima RCO/SRFB	
14	East-West Corridor	County WSDOT FHWA	TBD	TBD
15	Terrace Heights Bridge/Road Improvements	WSDOT FHWA County	TBD	TBD
16	Yakima Basin Integrated Plan – Actions on Naches and Wapato reaches	TBD	YRBWEP/Reclamation and Ecology	TBD
17	Removal of Toe Rock Upstream of Terrace Heights Bridge	County	RCO	In Progress (Funded)

Abbreviations and Acronyms:

City = City of Yakima
County = Yakima County
Ecology = Washington State Department of Ecology
FCAAP = Flood Control Assistance Account Program
FCZD = Flood Control Zone District
FEMA = Federal Emergency Management Agency
FHWA = Federal Highway Administration
KGH = Kennewick General Hospital
RCO = Recreation and Conservation Office
Reclamation = U.S. Bureau of Reclamation
SRFB = Salmon Recovery Funding Board
TBD = To Be Determined
USACE = U.S. Army Corps of Engineers
WSDOT = Washington State Department of Transportation
WWRP = Washington Wildlife and Recreation Program
YRBWEP = Yakima River Basin Water Enhancement Project



H:\Projects\3280 Gap to Gap Implementation\Anchor Draft TechMemo_Docs\Revision Request 12-24-2013\Revised figures\Figure 8 1135 Projects.mxd carolyne 1/27/2014 11:46:59 AM

Yakima County GIS

Feet
0 3,000 6,000

Figure 8
Section 1135 Proposed Action and Pending Cumulative Actions
Gap to Gap Floodplain Restoration and Enhancement Plan
Technical Memorandum

The following ten projects have already been completed and contribute to the Plan:

1. **SR 24 Bridge Replacement**: This project was led by WSDOT and involved widening the span of the SR 24 bridge by 1,500 feet to allow for reconnection of floodplain above and below the bridge, which had previously been a significant constriction on the river. This project was completed in 2006.
2. **Emergency KOA Campground Federal Levee Setback**: This project (completed in 2012) was an emergency action performed when the upstream end of the levee located on the east bank of the Yakima River immediately upstream of the new SR 24 bridge began to fail. USACE built the relocated levee on lands acquired by Yakima County and Reclamation. The levee ties into the east abutment of the new SR 24 bridge.
3. **Floodplain Land Acquisition**: As part of YRBWEP Phase II, Reclamation has purchased lands south of the SR 24 bridge and north of Union Gap. These lands can provide increased access to the floodplain when the DID #1 levee south of the SR 24 bridge is relocated to the east.
4. **Greenway Trail and City of Yakima Levee Relocation**: This City of Yakima-led project was completed in 2013. It occurred south of the WWTP, returning 330 acres to the active floodplain by moving the levee and the existing Greenway Trail west around where the reconfigured outfall area will be, once relocated. In addition, a noise control berm will be reconstructed along I-82 in 2014 or 2015.
5. **Levee Armoring Repair**: This project lies adjacent to the Boise Cascade Parking lot on the Greenway Trail. The federal project levee is located adjacent to I-82 landward of the Yakima River. The riprap armor on this portion of levee did not meet flood protection standards and 700 feet of armor along the Yakima River was replaced in 2012.
6. **Interior Levee Breaching (Boise Cascade)**: The Boise Cascade Levee extends from the Boise Cascade Parking lot along the Yakima River for 900 feet. This levee was originally constructed in the early 1900s as a part of the Boise Cascade Mill and was used to retrieve logs, which had been driven down the Yakima River from the Teanaway Drainage, and to protect log storage ponds behind the levee. The levee was expanded and armored in the early 1960s. The orientation of the levee relative to the river and the valley wall created a major constriction to flow, with adjacent gravel aggradation upstream. The armored face and toe of this levee was removed, three

breaches excavated at locations of former side channels, and the lowermost 60 feet of this levee were removed in 2010. The large flows (third highest on record) of the 2011 flood triggered a riverine response to the levee breaching, with scour head-cutting occurring upstream of the project, and mainstem channel widening and side channel reestablishment occurring downstream of the project.

7. **Interior Levee Removal Upstream of Terrace Heights**: This large levee removal and floodplain restoration project was completed in 2012 in association with the KOA levee setback near the SR 24 bridge, with interior levee material removed here was used to construct the new levee downstream. Approximately 170 feet of the County PL 84-99 levee, 800 feet of a large gravel berm (which acted as a levee), and 1,500 feet of former gravel pit perimeter levee were removed on Reclamation and WSDOT properties upstream of the Terrace Heights bridge.
8. **DID #3 Levee Crest Removal and New Trail**: This is a component of the City's floodplain restoration and Greenway Trail relocation project, which occurred in 2013 (see Item 4 above).
9. **O&M Projects – Seepage and Erosion Repairs**: Erosion repairs to the federal project levees have occurred in 2012 (as a result of the 2011 flood) upstream and downstream of the Moxee Branch railroad bridge. These repairs consisted of minor levee setback and significant armor and toe replacement. Seepage repairs (noted during the 2009 and 2011 floods) were performed in 2011 at the Marsh Road Levee near the Selah Moxee diversion, and at the Buchanan Lake Levee. These seepage repairs consisted largely of reinforcement on the landward side of the levee to prevent levee failure due to piping or seepage.

The following projects are in progress or expected to occur and would also be considered in the cumulative effects analysis, in addition to projects described in Sections 3.3.4 through 3.3.8:

1. **Sportsman Park Island Channels Restoration:** This Yakima County-led project will be completed in 2014 and includes increasing the flow capacity of flood channels in the Sportsman Island area south of the Terrace Heights bridge and north of the new KOA Campground levee. Capacity of the channels has been lost due to sedimentation and this capacity would be increased, along with providing varying aquatic habitat conditions at different flow levels, as a result of the project.

2. **City of Yakima WWTP Outfall Relocation and Floodplain Restoration**: This City of Yakima-led project is a continuation of the cumulative action project #4 described above, and is expected to be completed in 2014 and 2015. The existing outfall will be relocated to south of the WWTP with wastewater discharge released through a series of constructed channels, returning 330 acres to the active floodplain and allowing for DID #1 levee setback.
3. **East-West Corridor:** This Yakima County-led project would include installation of a new road to help reduce traffic congestion on Terrace Heights Drive, help connect the City of Yakima with the Terrace Heights neighborhood, and provide improved access across the Yakima River. Anticipated start of this project is to be determined in coordination with WSDOT. Funding has not yet been secured for this project.
4. **Terrace Heights Bridge/Road Improvements**: This WSDOT-led project includes widening the Terrace Heights bridge to the east to improve channel alignment, increase floodplain area, and increase flow conveyance and sediment transport (reduce backwater). Anticipated start of this project is to be determined. Funding has not yet been secured for this project.
5. **Yakima Basin Integrated Plan – Projects on Naches and Wapato Reaches**: These are floodplain restoration actions identified in the habitat enhancement program of the YBIP for reaches above and below the Gap to Gap Plan area. Reclamation has authority to implement some of the actions in the YBIP and is seeking additional authorities to implement the entire plan, including projects on these reaches.
6. **Removal of Toe Rock Upstream of Terrace Heights Bridge:** During the Interior levee removal described above, the toe rock of the County's PL 84-99 levee was not removed because in-water work was not allowed during that time period. This project is to remove those pieces of toe rock and armor that inhibit channel migration and side channel formation on Reclamation and WSDOT parcels.

.

6 FUNDING OPPORTUNITIES, AUTHORITIES, AND OTHER CONTRIBUTIONS

As discussed in Section 4.1, the proposed action to reconnect floodplains in the Plan area is consistent with the goals and recommended actions described in several significant planning documents related to flood hazard management and fish habitat restoration in both the Gap to Gap Reach and Yakima River as a whole. This section describes the various programs and agencies that have authority in the Plan area and descriptions for potential funding and/or property contributions.

6.1 Federal

6.1.1 USACE

Projects related to the Yakima Federal levee system and flood control would fall under USACE authority under three primary regulations: the Flood Control Act of 1948, the WRDA of 1986, as amended, and the Rivers and Harbors Act of 1899. See Table 5 for a summary of USACE authority and the maximum funding available under the authority.

Table 5
Summary of USACE Flood Control and Restoration Authorities

Regulation	Section	Authority	Funding (maximum)
Flood Control Act of 1948	205	Authorizes USACE to plan and construct small flood damage reduction projects that have not already been specifically authorized by Congress.	$7 million
WRDA of 1996	206	Authorizes the USACE to restore degraded aquatic ecosystems, if the proposed project demonstrates that it will increase aquatic ecosystem habitat units and is cost-effective.	$5 million
WRDA of 1986	1135	Authorizes modification to existing USACE projects to restore the environment and construct new projects to restore areas degraded by USACE projects.	$5 million
Rivers and Harbors Act 1899	408	Authorizes USACE to issue a permit for any person or persons to build upon, alter, or deface work built by the U.S. to prevent floods, based upon the finding that the proposed project: • Will not be injurious to the public interest • Will not impair the usefulness of the federal project	None

6.1.2 Reclamation

Reclamation currently has several authorities under which it may assist with portions of the proposed action. It has the authority to operate, maintain, and modify authorized features of the YRBWEP. It also has the authority to construct and maintain fish passage and protective facilities in the Yakima Basin. Under YRBWEP Phase II, it may acquire water rights and lands in the Yakima Basin and manage the lands acquired under that authority. Reclamation also has authority under the Fish and Wildlife Coordination Act to improve fish and wildlife habitat associated with water systems or water supplies affected by Reclamation projects, and have acquired significant land holdings in the Gap to Gap Reach to support restoration efforts. Reclamation may oversee with Ecology implementation of actions under YBIP not currently authorized, if such authority is eventually granted by Congress.

6.2 State

6.2.1 Ecology

In 2013, Ecology was legislatively appropriated $32 million in capital funds (ESSB 5035) to move several YBIP projects and activities forward during the 2013 to 2015 period. Initial mainstem floodplain improvement projects under the state YBIP funding include support to the City's WWTP levee setback and outfall reconfiguration. Additionally, Ecology has out-of-kind mitigation funding for a Kennewick General Hospital District water right on the Columbia River that will be managed in coordination with WDFW to implement habitat improvements, including the DID #1 levee setback. See Section 4.3.3 for additional information.

Ecology also administers FCAAP, which was established by the state legislature in 1984 to help local authorities reduce flood hazards and flood damages. Because there are many contributing factors to flood conditions, FCAAP fosters a holistic or watershed approach in minimizing flood hazards from headwaters to the coastal environment. As discussed in Section 2.4.2, County adoption of the CFHMP fulfilled one of the main requirements for eligibility for FCAAP funding. Grant funding for this program has been limited in recent years. In 2013, the Washington State legislature appropriated floodplain restoration funding totaling $36 million, with $25 million of the total committed to Western Washington

floodplain restoration projects. The remaining $11 million is an additional potential funding source for projects in the Gap to Gap Reach.

6.2.2 RCO

Washington has used its allocation of PCSRF funding along with state funding to support salmon recovery efforts, which is overseen by the SRFB under the RCO. Washington has received Congressional PCSRF appropriations from NMFS each year since 2000.

RCO also oversees the Washington Wildlife and Recreation Program, which provides funding to protect habitat, preserve working farms, and create new local and state parks.

6.2.3 WSDOT

Access and use of WSDOT real estate in the Plan area will be needed for projects proposed on WSDOT property.

6.3 Local

6.3.1 Yakima County

The Yakima County Board of Commissioners established the FCZD in 1998 to provide funding for and address flood management needs in the County and implement the Upper Yakima CFHMP (OTAK and KCM 2007). FCZD activities include identification, engineering, and construction of capitol project to mitigate and/or address flooding problems. See Section 2.4.1 for further discussion.

6.3.2 City of Yakima

The City of Yakima owns and operates the City's WWTP, which discharges its outfall to the Gap to Gap Reach. Projects in the Plan will be implemented in coordination with the City's WWTP outfall reconfiguration. State grant funding received by the City for the outfall reconfiguration are anticipated to be utilized as County matching funds for a cost-sharing agreement with the USACE.

6.3.3 Kennewick General Hospital (DID #1 Levee Setback)

An Out-of-Kind Mitigation Plan was developed as a part of Kennewick General Hospital's (KGH) water right application, which was recommended for approval in September 2013. The East Bank DID #1 Levee Setback was included in KGH's out-of-kind mitigation approach as provided in the Final Report of Examination (Ecology 2013), and Yakima County is anticipated to receive a portion of this mitigation funding for this project. This project will be administered through agreements with either Ecology or the RCO.

7 REFERENCES

City of Yakima, 2013. Proposal prepared by Ryan Anderson for the City of Yakima Wastewater Treatment Plant Outfall Reconfiguration for Yakima Basin Integrated Plan Early Implementation Funds. April 15, 2013.

Ecology (Washington State Department of Ecology), 2013. *Report of Examination for Water Right Application – Kennewick General Hospital*. Water Right Number G4-30584. September 27, 2013.

Floyd, Ben, 2013. Ben Floyd, Anchor QEA, personal communications with Paul Massart, USACE Seattle District. September 27, 2013.

Freudenthal, J., D. Lind, R. Visser, P. Mees, 2005. *Draft Yakima Subbasin Salmon Recovery Plan*. Prepared for the Yakima Subbasin Fish and Wildlife Planning Board. October 19, 2005.

KCM, 1997. *Upper Yakima River Comprehensive Flood Hazard Management Plan*. Prepared for Yakima County Department of Public Works. Project #2340028. October 1997.

Otak and KCM, 2007. *Upper Yakima River Comprehensive Flood Hazard Management Plan*. Prepared for the Yakima County Flood Control Zone District. RM 107-108. June 2007.

Reclamation and Ecology (U.S. Bureau of Reclamation and the Washington State Department of Ecology), 2011. *Yakima Basin Study Volume 1: Proposed Integrated Water Resource Management Plan*. U.S. Department of the Interior, Bureau of Reclamation and Washington State Department of Ecology. April 2011.

Snyder, E.B., J.A. Stanford, 2001. *Review and Synthesis of River Ecological Studies in the Yakima River, Washington, with Emphasis on Flow and Salmon Habitat Interactions*. Submitted to the U.S. Bureau of Reclamation. August 2001.

Stanford, J.A., E. Snyder, M. Lorang, D. Whited, P. Matson, J. Chaffin, 2002. *The Reaches Project.* Project No. 1997-04700, 152 electronic pages, (BPA Report DOE/BP-00005854-1). October 2002.

USACE (U.S. Army Corps of Engineers), 2012. Presentations by Dennis Fischer on the Yakima Flood Control Project – Left Banks and Right Banks, Yakima, Washington. May 2012.

WDNR (Washington Department of Natural Resources), 2013. *State-owned Aquatic Lands*. Cited: October 31, 2013. Available from: http://www.dnr.wa.gov/Publications/aqr_aquatic_land_boundaries.pdf.

Yakima River Basin Conservation Advisory Group, 1998. *Basin Conservation Plan for the Yakima River Basin Water Conservation Program Yakima Basin Conservation Plan.* U.S. Bureau of Reclamation. April 1998.

YRBWEP (Yakima River Basin Water Enhancement Project) Act. Public Law 103-434, October 31, 1994, as amended by Public Law 105-62, October 13, 1997, and Public Law 106-372, October 27, 2000.

YBFWRB (Yakima Basin Fish and Wildlife Recovery Board), 2004. *Yakima Subbasin Plan*. Prepared for the Northwest Power and Conservation Council. 2004.

YBFWRB, 2009. *Yakima Steelhead Recovery Plan*, extracted from the 2005 Yakima Subbasin Salmon Recovery Plan with updates. Yakima Basin Fish and Wildlife Recovery Board. August 2009.

APPENDIX A
SECTION 1135 NATIONAL ENVIRONMENTAL POLICY ACT WORK PLAN

TABLE OF CONTENTS

1 EXPECTED KEY ISSUES AND FOCUS AREAS

This section identifies elements of the environment recommended for focused evaluation in the Gap to Gap Floodplain Restoration and Enhancement Plan (Plan) National Environmental Policy Act (NEPA) environmental analysis related to Section 1135 funded Plan elements (proposed action).

Impacts are expected to occur primarily as a result of removal or breaching of the existing levees, construction of new levees along alignments setback from the existing levees, and restoration activities. Impacts associated with levee removal, breaching, and construction are expected to generally be short term and substantial in nature. Impacts are also expected to occur as a result of the restoration of floodplain areas where the new levees are setback from the existing ones, and the river is reconnected to more of its historic floodplain in the proposed action area. These floodplain restoration impacts are expected to be more long term in nature and for most resources are expected to provide a net environmental benefit over existing conditions.

Table 1 identifies those elements of the environment that are expected to be effected by the proposed Section 1135 funded elements and generally whether the effect is expected to be negative (-), beneficial (+), neutral (0), or potentially having both positive and negative aspects. These preliminary evaluations are based on the review of previous documents listed in Section 3 of this Appendix, which previously looked at actions and resources in the proposed action area.

Table 1

Potential Proposed Action Effects to Elements of the Environment

Elements of the Environment	Potential Effects due to:	
	Construction	Floodplain Restoration
Geology and Soils	-	+
Geomorphology	0	+
Hydraulics	0	+
Water Quality	-	+
Vegetation and Wetlands	-	+
Fish and Wildlife	-	+
Special Status Species	-	+
Cultural Resources and Historic Properties	-	-
Socio-economics and Environmental Justice	±	±
Land Use	-	±
Recreation	-	+

Anticipated analyses that would likely need to be conducted in the NEPA environmental analysis for the proposed action are described in the following sections.

1.1 Geology and Soils

Proposed construction activity has the potential to result in erosion and sedimentation effects while floodplain restoration activities are anticipated to have a beneficial effect.

The analysis of existing conditions and proposed effects should include review of the previous studies listed in Section 3 of this Appendix and discussions for the following soils- and geology-related issues:

- Topographic and geologic setting;
- Site geology, in-water sediment, and subsurface soils conditions;
- Geologic hazards, including primarily levee and bank erosion; and

- Groundwater, including regional groundwater systems and flow, site groundwater conditions, groundwater recharge and discharge, and current aquifer use.

1.2 Geomorphology

A number of studies have been conducted documenting geomorphic change in relation to sediment supply, and analysis of future channel conditions based on changes to levees, including the East Bank Diking Improvement District (DID) #1 levee setback (see Section 3 of this Appendix). Northwest Hydraulics Consultants (NHC) conducted a review of hydraulic and geomorphic studies on behalf of Yakima County in 2011 (NHC 2011).

NHC recommended that additional investigations should include gathering topographic surveys in the gravel pits and the adjacent floodplain and more detailed channel bathymetry. Yakima County plans to have NHC develop a two dimensional (2-D) numerical model of the reach extending from upstream of the State Route (SR) 24 bridge down past the DID #1 levee. The 2-D model would be used to assist in designing floodplain and river restoration measures, including channel stabilization measures, and to verify that the anticipated flood level reduction due to setting back the levee can still be achieved within the context of the existing and anticipated geomorphological conditions in the reach.

Additional hydraulic design investigations were recommended by NHC. See Section 1.3 for additional detail.

1.3 Hydraulics

The Reaches Report (Stanford et. al 2002) identified the Union Gap Reach, which is synonymous with the Gap to Gap area, as offering the greatest potential to recover the aquatic ecosystem.

NHC conducted a review of hydraulic and geomorphic studies on behalf of Yakima County in 2011 (NHC 2011). NHC concluded that additional hydraulic design investigations should be carried out to design appropriate river modification measures to prevent an avulsion of the river into the existing gravel pits after the DID #1 levee is set back. Hydraulic design studies should include:

1. Design of measures to prevent an avulsion into the existing pits near the DID #1 levee;
2. Mitigating potential scour or erosion at the SR 24 Bridge; and
3. Mitigating upstream degradation to prevent an avulsion into the Beech Street gravel pit.

1.4 Water Quality

The proposed action is likely to provide an overall net benefit to water quality conditions by improving riparian areas and floodplain habitat, with temporary negative effects potentially occurring during construction. Elements of the proposed action would provide some benefits to water quality by improving riparian areas and floodplain habitat in certain areas, but would likely provide only minor overall benefits to the basin (Reclamation and Ecology 2012). In 2012, the U.S. Environmental Protection Agency (EPA) issued a study titled, *The Relation between Nitrate in Water Wells and Potential Sources in the Lower Yakima Valley* (EPA 2012). This study will be evaluated along with other resource documents listed in Table 2 to determine information relevance to the proposed action's effects on water quality.

Additionally, the EPA Office of Research & Development has a Regional Applied Research Effort (RARE) grant to study how groundwater (nitrate levels) improves as restoration occurs. The first year of the study involves collecting data on background levels using City of Yakima Wastewater Treatment Plant (WWTP) wells (nine) plus many other monitoring wells to establish a baseline. EPA Region X has developed a map of these monitoring wells. A summary of the working hypothesis will be obtained and documented as a part of the water quality evaluation, along with other relevant information for describing anticipated effects.

1.5 Vegetation and Wetlands

The proposed action is likely to provide an overall net benefit to vegetation and wetland conditions, but have limited, potential negative impacts due to the establishment of non-native, invasive species on disturbed soils. Proposed action elements to reconnect floodplains are intended to improve and restore degraded floodplain and riparian habitat, which would provide benefits to riparian and wetland vegetation. Construction activities would involve

potential short-term impacts to vegetation at the construction sites and any ancillary sites like borrow pits or access roads.

General background information on biological resources such as general habitat features of the proposed action area will be compiled from the sources listed in Section 3 including information from local and federal agencies, professional documents and other information. Other non-published sources will also be used; these include communications with professional biologists experienced in the proposed action area and data from past and current or planned field surveys associated with the proposed action area.

1.6 Fish and Wildlife

The proposed action is likely to provide an overall net benefit to fish and wildlife habitat, but improvements could also benefit non-native predatory fish such as bass or other species that feed on juvenile salmonids. Habitat improvements are anticipated with the reconnection of floodplain. Construction activities would involve potential short-term impacts to fish and wildlife.

Fish, wildlife, and invertebrate species common to the proposed action area will be identified and aspects of their biology will be briefly discussed to provide the necessary context for the discussions on existing conditions and potential effects of proposed elements. Common species will be identified by two means; using data from recent and potential future field surveys made by professional biologists, and by summarizing current published species range data. Data on species abundance and diversity in the proposed action area will be described as available.

1.7 Special Status Species

Floodplain reconnection is anticipated to provide benefits to federal and state species listed as endangered, threatened, or species of concern, in comparison to existing conditions and on-going actions within the proposed action area, but improvements could also benefit non-native predatory fish such as bass or other species that feed on juvenile salmonids.

Documents listed in Section 3 will be reviewed to identify the potential of listed federal and state threatened or endangered species, and species of concern to occur in the vicinity of the proposed action. The evaluation of special status species is intended to: 1) describe the legal background of the ESA and how it pertains to the proposed action; 2) identify federal and state listed species of special concern and sensitive habitats that potentially occur in the proposed action area; and 3) discuss the biology of each species to provide the necessary background for the assessment of impacts from the proposed action.

1.8 Cultural Resources and Historic Properties

The proposed action has potential to impact cultural, historical, and archaeological resources. The proposed action area is within the traditional territory of the Yakama Nation and may contain traditional cultural properties, sacred sites, or cultural landscapes. Early survey maps indicate Native American trails crossing the proposed action area. Much of the area has been identified as having elevated potential for archaeological resources by the Department of Archaeology and Historic Preservation (DAHP). Historical built environment features, from buildings to irrigation structures, may also be present.

Requirements to analyze impacts to cultural, historical, and archaeological resources are generally fulfilled through coordination with the Section 106 process. Section 106 of the National Historic Preservation Act (and its implementing regulations at 36 CFR 800) requires federal agencies to take into account the effects of their undertakings on historic properties. An historic property is "any prehistoric or historic district, site, building, structure, or object…eligible for inclusion in the National Register of Historic Places" (NRHP) (36 CFR 800.16(l)(1)).

To comply with Section 106 and analyze impacts to historic properties, the proposed action should:

1. Coordinate with all involved federal agencies to ensure that agency-specific regulations, guidelines, and agreements are followed. In particular, compliance with the U.S. Army Corps of Engineer's (USACE's) regulations in Appendix C of 33 CFR 325, and the Federal Highway Administration's Statewide Programmatic Agreement may be required.

2. Conduct a literature review to identify known and likely resources. This review should include historic and contemporary sources, such as historic maps, photographs and descriptions, and previous archaeological, historical, and ethnographic research.
3. Perform archaeological and architectural field survey where research indicates that historic properties may be present and affected by the proposed action, and prior surveys have not been conducted.
4. Evaluate any potential historic properties in the proposed action area, and recommend whether they are NRHP-eligible.
5. Recommend whether the proposed action will have adverse effects to NRHP-eligible historic properties.
6. Assist with the development of mitigation documents, archaeological monitoring plans, or unanticipated discovery plans, as needed.

The involved federal agencies will consult with tribes and DAHP, and make final determinations of NRHP-eligibility and proposed action effects.

1.9 Socio-Economics and Environmental Justice

Presidential Executive Order (EO) 12898 requires federal agencies to determine whether agency actions would have disproportionately high and adverse effects on minority and low-income populations. An evaluation of potentially affected properties would need to be reviewed to identify and avoid such adverse effect.

The evaluation of socio-economics should include gathering data on population characteristics (i.e., race, age, limited English proficiency, poverty status, and median household income), household characteristics (i.e., owner-occupied versus rental housing, number of person per household, and subsidized/transitional/emergency housing), community facilities and gathering places (i.e., churches, schools, community centers, senior centers), and social and public employment services. The evaluation of environmental justice should include analysis, minority, low-income, and other special populations (i.e., limited English proficiency) to determine whether disproportionately high impacts (including associated construction impacts) are expected to occur as a result of the proposed action

1.10 Land Use

The proposed action would require acquisition of property or easements, but would largely be located on property owned by willing participants and would be compatible with existing land uses.

An important element of the land use analysis will be a discussion of the proposed action's relationship to various planning regulations and policies, including an analysis of consistency with applicable use and development standards, flood hazard management plans, and salmon and steelhead recovery plans. Data should also be assembled on current land uses, trends, and forecasts for economic variables that influence the land use issues that may be affected by the proposed action (these variables include land ownership patterns, current and potential future land uses, and opportunities for and constraints on potential future land uses).

Surrounding properties may experience short-term impacts during construction. These impacts would be temporary and disruption would cease following completion of construction.

1.11 Recreation

The proposed action area contains several existing publicly owned recreation sites, facilities, and opportunities, including the Yakima Greenway pathways and related parks, Sherman Park, Yakima Arboretum, Washington State Sportsman Park, and the Yakima River. Short-term disruptions to the trail system due to access limitations during construction may result. These impacts would be temporary and disruption would cease following completion of construction.

2 SCOPING AND COOPERATING AGENCY STRATEGY

The purpose of this section is to describe how scoping could occur to ensure that the applicable Section 1135 requirements are met. This section will be incorporated into a joint USACE/Yakima County public involvement strategy in coordination with the existing Gap to Gap Reach stakeholders Yakima County currently communicates with, and other identified interested parties. Additionally, this section identifies potential federal, state, tribal, or local agencies that could be invited to participate in the process as a cooperating agency.

2.1 Scoping Strategy

For NEPA compliance, Yakima County is seeking support from USACE under two primary authorities: Section 1135 of the Water Resources Development Act and Section 408 of the Rivers and Harbors Act. Both authorities require compliance with NEPA. USACE has initially indicated that a NEPA Environmental Assessment would likely be appropriate for the Gap to Gap Floodplain Restoration and Enhancement Plan (Floyd 2013). This document addresses the NEPA strategies related to the Section 1135 funded elements, which include:

- Federal project levee setback at Nob Hill
- East Bank DID #1 levee setback south of SR 24
- Blue Slough Hydrologic, Habitat and Fish Access Improvements
- Sportsman Park Island Channels Restoration

Elements that would require Section 408 approval would be undertaken under a separate NEPA analysis in further coordination with USACE.

Engineering Record 1105-2-100 (Appendix B) outlines USACE's requirements for public involvement, collaboration, and coordination in Civil Works planning studies. USACE and the County will need to develop and implement an effective public involvement strategy as an integral part of the planning process for the feasibility study and for NEPA compliance. At a minimum, the public involvement strategy will identify communication protocols, potentially affected parties (including regulatory agencies), and methods to stimulate meaningful participation and dialogue.

Since the NEPA process would be led by USACE, they will distribute a public scoping notice to federal, state, and local agencies, affected Indian tribes, Yakima County as the proponent of the action, and other interested persons to solicit input and feedback on the proposal. If USACE determines that an Environmental Impact Statement is required, which based on preliminary communications with USACE is not expected, USACE would issue a notice of intent in the Federal Register. Additional methods could include mailing lists, newsletters, a proposed action website, public notices and announcements, comment forms, and public meetings.

2.2 Lead and Cooperating Agency Strategy

USACE will typically be lead NEPA agency for USACE civil works projects. As the non-federal sponsor of the proposed action, Yakima County may elect to request co-lead agency status on the proposal. Reclamation and other agencies such as Washington State Department of Transportation (WSDOT) could also potentially request co-lead status for the NEPA environmental review, as both these agencies have extensive land holdings in the action area.

A federal, state, tribal, or local agency having special expertise with respect to an environmental issue or jurisdiction by law may also be a cooperating agency in the NEPA process. For the project, the following agencies could be invited to participate as potential cooperating agencies. These are agencies that have a direct interest in the proposed action, including but not limited to having potential impacts to existing facilities within the proposed action area, having expertise in flood control, contributing funding, or having real property interests:

- U.S. Bureau of Reclamation
- Washington State Department of Ecology
- Washington State Department of Natural Resources
- Washington State Department of Transportation
- City of Yakima
- City of Union Gap
- Yakama Tribe

The final determination of who will be included as co-lead or cooperating agencies will be determined in coordination with USACE and potential cooperating agencies prior to implementation of the USACE NEPA process. These cooperating agencies will be responsible for assisting USACE with preparing the NEPA document.

3 PRIOR STUDIES AND POTENTIAL DATA GAPS

The available environmental data listed in Table 2 provides useful information regarding the Gap to Gap Reach, flood hazard protection, and the restoration potential in the area. Table 2 also identifies where there may be potential data gaps that would need to be addressed for the NEPA environmental review. The County has staff, Anchor QEA, Northwest Hydraulic Consultants (NHC), and others available to address data gaps, in coordination with USACE and other agencies.

Table 2

Summary of "Best Available Science" Documents and Additional Information Needs

Title	Date	Author(s)
Floodplain Studies		
Floodplain Information – Yakima and Naches Rivers, Yakima and Union Gap	1970	USACE
Floodplain Information – Yakima River, City of Selah and Vicinity	1973	USACE
Floodplain Information – Yakima and Naches Rivers, City of Selah and Vicinity	1973	USACE
FEMA and other floodplain studies associated with past projects	Varies	FEMA, WSDOT, others
City of Yakima WWTP Outfall Reconfiguration Studies	2011-2013	City Consultants
Flood Hazard Management Plans		
Upper Yakima CFHMP	1997	Yakima County
Upper Yakima CFHMP	2007	Yakima County
Hydraulic and Geomorphology Studies		
Review and Synthesis of River Ecological Studies in the Yakima River, Washington, with Emphasis on Flow and Salmon Habitat Interactions	2001	Snyder, E.B., J.A. Stanford (for Reclamation)
The Reaches Project: Ecological and Geomorphic Studies Supporting Normative Flows in the Yakima River Basin	2002	Stanford, J., Eric Snyder, Mark Lorang, Diane Whited, Phillip Matson, Jake Chaffin
Yakima River Geomorphology and Sediment Transport Study: Gap to Gap Reach	2010	Reclamation
Review of River Geomorphology and Sediment Transport Study Gap to Gap Reach, Yakima, WA	2011	NHC

Title	Date	Author(s)
Additional Information Needs: • Design: design details are needed for many elements of the proposed action, including but not limited to: – Blue Slough intake modifications, and channel modifications and improvements; – Measures to prevent an avulsion into the existing pits near the DID No. 1 levee; – Mitigating potential scour or erosion at the SR24 Bridge; and – Mitigating upstream degradation to prevent an avulsion into the Beech Street gravel pit. • Modeling – Results from a 2-D numerical model of the reach extending from upstream of the SR 24 Bridge down past the DID No. 1 levee to identify anticipated river channel modifications from the proposed actions, areas where periodic channel maintenance may be likely, refinements to plans for addressing filling in of existing ponds/river capture of these areas, and other effects. • Supplemental Analyses – Results from additional investigations, including gathering topographic surveys in the gravel pits and the adjacent floodplain and more detailed channel bathymetry.		
Recovery Plans and Fish Modeling		
Yakima Subbasin Plan (with associated Ecosystem Diagnosis and Treatment Model)	2004	YBFWRB
Yakima Subbasin Salmon Recovery Plan	2005	Freudenthal, Joel, David Lind, Richard Visser, and Phil Mees
Mid-Columbia Steelhead ESA Recovery Plan	2009	NMFS
Yakima Steelhead Recovery Plan	2009	YBFWRB
Integrated Plan – Fisheries Habitat Benefits Presentation and Technical Memorandum (includes Ecosystem Diagnosis and Treatment Model and All H Analyzer)	2010	Reclamation
5-Year Review: Summary and Evaluation of the Middle Columbia River Steelhead	2011	NOAA-NMFS
Additional Information Needs: • Modeling – Additional Ecosystem Diagnosis and Treatment (EDT) modeling could be conducted to support effects analysis, as could decision support system modeling. • Supplemental Analyses – may need to develop supplemental qualitative analyses to characterize proposed action effects on anadromous and resident fish species.		
Habitat Enhancement Plans		
Yakima Basin Conservation Plan	1998	Yakima River Basin CAG
YBIP Volume 1	2011	Reclamation and Ecology
YBIP PFEIS	2012	Reclamation and Ecology

Title	Date	Author(s)
Additional Information Needs: • Design details on specific elements of the proposed actions • Modeling – addressed through 2-D modeling described above		
Water Quality		
Relation between Nitrate in Water Wells and Potential Sources in the Lower Yakima Valley	2012	EPA
Environmental Studies and Drawings Prepared for Projects in the Vicinity		
SR 24, I-82 to Keys Road EA	2003	WSDOT
Public Notice to Prepare an EA: Yakima Authorized Levee Rehabilitation Project	2012	USACE
Sportsman Park Rehabilitation Plans (Drawings)	2011	USACE
Billy's Pond Design Plans	2012	City of Yakima
City of Yakima WWTP Alternative Outfall Configuration	2012	City of Yakima
City of Yakima WWTP Outfall Aquatic Lands Easement No. 51-079464		WDNR
Valley Mall Boulevard I-82 Interchange/Roundabout EA		WSDOT
ESA Section 7(a)(2) Biological Opinion and Magnuson-Stevens Fishery Conservation and Management Act EFH Consultation Yakima Authorized Levee System Repairs, Yakima County, WA.	2012	NOAA-NMFS

Table Abbreviations and Acronyms:
2-D = Two Dimensional
BA = Biological Assessment
CAG = Citizen Advisory Group
CFHMP = Comprehensive Flood Hazard Management Plan
EA = Environmental Assessment
Ecology = Washington State Department of Ecology
EFH = Essential Fish Habitat
EPA = Environmental Protection Agency
ESA = Endangered Species Act
NHC = Northwest Hydraulic Consultants
NMFS = National Marine and Fisheries Services
NOAA = National Oceanic and Atmospheric Administration
O&M = Operations and Maintenance
PFEIS = Programmatic Final Environmental Impact Statement
Reclamation = U.S. Bureau of Reclamation
USACE = U.S. Army Corps of Engineers
WDNR = Washington Department of Natural Resources
WSDOT = Washington State Department of Transportation
WWTP = Wastewater Treatment Plant
YBFWRB = Yakima Basin Fish and Wildlife Recovery Board
YBIP = Yakima Basin Implementation Plan

4 ENVIRONMENTAL DOCUMENTATION ROLES AND ASSIGNMENTS

Table 3 identifies assignments associated with developing the NEPA documentation for the proposed action. Items in bold uppercase indicate a lead role, while items in lowercase indicate a supporting role.

Table 3
NEPA Roles and Responsibilities

Task	Yakima County	USACE	Federal and State Permitting Agencies	Cooperating Agencies
Determine Lead and Cooperating Agencies	**L**	**L**		**s**
Develop Public Involvement Strategy	**L**	**L**		
Scoping	**s**	**L**		**s**
Development of Final Alternatives	**L**	**L**		**s**
Integrated Section 1135 NEPA evaluation	**s**	**L**		**s**
Biological Evaluation for ESA Consultation	**s**	**L**	**L**	**s**
Fish and Wildlife Coordination Act Documentation	**s**	**L**	**L**	
Wetland and Stream Delineation	**s**		**L**	
Section 106 Documentation	**s**	**L**	**s**	**s**

Regarding preparation of the NEPA documentation, USACE may elect to lead preparation of the documentation with minimal technical support from Yakima County. Alternatively, USACE may elect to delegate technical responsibilities and preparation of the NEPA documentation to Yakima County. In either case, Anchor QEA will work closely with NHC to support Yakima County in preparing the technical documentation for the NEPA document and permitting documentation.

5 TENTATIVE SCHEDULE

Steps to completion of the USACE process and associated NEPA compliance is shown in Table 4. It is likely that USACE will determine that an Environmental Assessment and Finding of No Significant Impact are appropriate, and the schedule has been developed based upon this assumption. Actual timeframe may vary as necessary during implementation to meet the schedule ultimately agreed to with USACE. If an Environmental Impact Statement is determined to be appropriate, then the schedule would extend an additional one to three years, and include additional steps.

Table 4

USACE Civil Works Coordination Schedule (NEPA)

Permit/Approval	Review and Approval Timeframe/Dependency	Duration (Months)															
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Coordinate with Civil Works Regarding Strategy, Schedule, and Cooperating Agencies																	
Develop Public Involvement Strategy																	
Scoping																	
10% Design District Quality Control (DQC) Review																	
35% Design DQC Review																	
Complete NEPA EA[1]	Schedule based on EA being appropriate																
Post-Rod Permits[2]	Timeframe TBD: post-NEPA, could be approximately 1 to 2 years to complete																

Notes

Minimum anticipated review period

Potential additional review period

1. Other steps are likely to be included in the process including preparing agency technical review (ATR) cost estimates, alternatives formulation briefings, and potentially independent external peer review.
2 Section 10/404 and CWA/CZMA; HPA Fish Habitat Enhancement, National Pollutant Discharge Elimination System (NPDES) Construction Stormwater, WDNR Aquatic Lands RoE, WSDOT Real Estate Permit, etc.

Abbreviations and Acronyms:
ATR = Agency Technical Review
DQC = Design Quality Control
EA = Environmental Assessment
EIS = Environmental Impact Statement
NEPA = National Environmental Policy Ac
TBD = To be determined

6 REFERENCES

Ackerman, Nicklaus, Steven Cramer and Joseph Carlson, 2002 (Ackerman et. al, 2002). Estimation of Production Potential for Anadromous Salmonids above Keechelus Dam in the Yakima Basin. Prepared for Yakima Basin Joint Board.

EPA, 2012. Relation between Nitrate in Water Wells and Potential Sources in the Lower Yakima Valley. EPA Region 10. September 2012.

Floyd, Ben. Anchor QEA, personal communications with Paul Massart, USACE Seattle District. September 27, 2013.

Freudenthal, Joel, David Lind, Richard Visser, Phil Mees, 2005 (Freudenthal et. al, 2005). Draft Yakima Subbasin Salmon Recovery Plan. Prepared for the Yakima Subbasin Fish and Wildlife Planning Board. October 19, 2005.

KCM, 1997. Upper Yakima River Comprehensive Flood Hazard Management Plan. Prepared for Yakima County Department of Public Works. Project #2340028. October 1997.

NHC, 2011. Review of River Geomorphology and Sediment Transport Study Gap to Gap Reach, Yakima, WA. Prepared for Yakima County by Northwest Hydraulic Consultants (NHC). January 18, 2011.

NMFS, 2012. Endangered Species Act (ESA) Section 7(a)(2) Biological Opinion and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat (EFH) Consultation. Yakima Authorized Levee System Repairs, Yakima County, Washington. (6th Field HUC: 170300030206, City of Yakima – Yakima River). National Marine Fisheries Service.

Otak and KCM, 2007. Upper Yakima River Comprehensive Flood Hazard Management Plan, RM 107-108, June 2007 Update. Prepared for the Yakima County Flood Control Zone District. June 2007.

Reclamation, 2010. Integrated Plan – Fisheries Habitat Benefits Presentation. Yakima River Basin Watershed Enhancement Workgroup. U.S. Department of Interior, Bureau of Reclamation.

Reclamation and Ecology, 2011. Yakima Basin Study Volume 1: Proposed Integrated Water Resource Management Plan. U.S. Department of the Interior, Bureau of Reclamation and Washington State Department of Ecology. April 2011.

Reclamation and Ecology, 2012. Yakima River Basin Water Resource Management Plan Final Programmatic Environmental Impact Statement. U.S. Department of the Interior, Bureau of Reclamation and Washington State Department of Ecology. March 2012.

Snyder, E.B., J.A. Stanford, 2001. Review and Synthesis of River Ecological Studies in the Yakima River, Washington, with Emphasis on Flow and Salmon Habitat Interactions. Submitted to the U.S. Bureau of Reclamation. August 2001.

Stanford, Jack, Eric Snyder, Mark Lorang, Diane Whited, Phillip Matson, Jake Chaffin, ''The Reaches Project'', Project No. 1997-04700, 152 electronic pages, (BPA Report DOE/BP-00005854-1), October 2002.

Yakima River Basin Conservation Advisory Group, 1998. *Basin Conservation Plan for the Yakima River Basin Water Conservation Program Yakima Basin Conservation Plan.* April 1998, as published by the U.S. Bureau of Reclamation

YBFWRB. 2004. Yakima Subbasin Plan. Prepared for the Northwest Power and Conservation Council. Yakima Basin Fish and Wildlife Recovery Board.

YBFWRB. 2009. Yakima Steelhead Recovery Plan extracted from the 2005 Yakima Subbasin Salmon Recovery Plan with updates. Final August 2009. Yakima Basin Fish and Wildlife Recovery Board.

APPENDIX B
SECTION 1135 ENVIRONMENTAL ASSESSMENT OUTLINE

TABLE OF CONTENTS

List of Tables

List of Figures

LIST OF ACRONYMS AND ABBREVIATIONS

Abbreviation	Definition

EXECUTIVE SUMMARY

Background

Purpose and Need

Alternatives Including the Proposed Action

Environmental Effects of the Proposed Action

Implementation

1 INTRODUCTION

1.1 Study Authority

1.2 Purpose and Need

1.3 Location of Study Area

1.4 Study Area Context and History

1.4.1 Convergence of Two Rivers

1.4.2 Levee Risks and Repairs

1.4.3 Degraded Floodplain Functions

1.4.4 Gap to Gap Restoration Potential

1.5 Prior Report, Studies, and Ongoing Projects

1.5.1 Federal Reports and Projects

1.5.2 Non-Federal Reports and Projects

2 AFFECTED ENVIRONMENT

2.1 Geology and Soils

2.2 Geomorphology

2.3 Hydraulics

2.4 Water Quality

2.5 Vegetation and Wetlands

2.6 Fish and Wildlife

2.7 Species Status Species

2.8 Cultural Resources and Historic Properties

2.9 Socio-economics and Environmental Justice

2.10 Land Use

2.11 Recreation

3 PLAN FORMULATION

3.1 Methodology

3.2 Alternatives Development Process

3.2.1 No Action

3.2.2 Repair in Kind

3.2.3 Partial Implementation of Plan Elements

3.2.4 Full Implementation of Plan Elements

3.3 Planning and Design Consideration

3.4 Preliminary Designs

3.5 Habitat Benefit and Cost Analysis of Restoration Measures

3.6 Cost Effectiveness and Incremental Cost Analysis

3.7 Evaluation and Identification of Recommended Plan

4 RECOMMENDED PLAN

4.1 Description of Recommended Plan

4.2 Construction Approach

4.3 Construction Sequencing and Phasing

4.4 Real Estate Requirements

4.5 Cost Estimate

4.6 Final Design Considerations

4.7 Operation and Maintenance, Monitoring, and Adaptive Management

5 ENVIRONMENTAL EFFECTS OF THE PROPOSED ACTION

5.1 Geology and Soils

5.2 Geomorphology

5.3 Hydraulics

5.4 Water Quality

5.5 Vegetation and Wetlands

5.6 Fish and Wildlife

5.7 Species Status

5.8 Cultural Resources and Historic Properties

5.9 Socio-Economics and Environmental Justice

5.10 Land Use

5.11 Recreation

5.12 Indirect and Secondary Effects

5.13 Cumulative Impacts

5.14 Unavoidable Adverse Impacts and Mitigation

6 ENVIRONMENTAL COMPLIANCE REQUIREMENTS

6.1 National Environmental Policy Act

6.2 Fish and Wildlife Coordination Act

6.3 Endangered Species Act

6.4 Clean Water Act

6.5 National Historic Preservation Act

6.6 Air Quality Act

6.7 Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d)

6.8 Wild and Scenic Rivers Act (16 U.S.C. 1271-1287)

6.9 Executive Order 12898, Environmental Justice

6.10 Executive Order 11990, Protection of Wetlands, May 24, 1977

6.11 Executive Order 11988, Floodplain Management, May 24, 1977

6.12 Native American Graves Protection and Repatriation Act

6.13 Executive Order 13175, Tribal Coordination and Consultation, November 6, 2000

7 PROJECT IMPLEMENTATION

7.1 Funding Options and Authorities

7.2 Cost Sharing

7.3 Schedule

7.4 Land, Easement, Right-of-way, Relocation, and Disposal Areas

7.5 Environmental Compliance Requirements

7.6 Monitoring and Operation, Maintenance, Repair, Replacement and Rehabilitation

7.7 Views and Responsibilities of the Sponsor

8 PUBLIC INVOLVEMENT, REVIEW, AND CONSULTATION

8.1 Stakeholder and Public Involvement

8.2 Agency and Public Comments and Responses

9 CONCLUSION

10 REFERENCES

11 LIST OF PREPARERS

APPENDIX C
GAP TO GAP AGENCY SCOPING MEETINGS SUMMARY

ANCHOR QEA

8033 W. Grandridge Avenue, Suite A
Kennewick, Washington 99336
Phone 509.491.3151
www.anchorqea.com

MEMORANDUM

To:	Joel Freudenthal, Yakima County	**Date:**	July 15, 2013
From:	Ben Floyd, Anchor QEA	**Project:**	130739
Cc:	Bob Montgomery, Dave Kaumheimer, Derek Koellmann, and Tracy Drury		
Re:	Gap to Gap Agency Scoping Meetings Summary		

Joel Freudenthal, Derek Koellmann, Dave Kaumheimer, and Ben Floyd met with representatives from the City of Yakima (City), Washington State Department of Transportation (WSDOT) and U.S. Bureau of Reclamation (Reclamation) in three separate meetings on June 10, 2013. Results from these meetings are summarized below.

CITY OF YAKIMA (RYAN ANDERSON)

Key Areas the City would Like to See Addressed

- Document how restoration improvements would affect the City outfall for their waste water treatment plan (WWTP). The City outfall is currently in compliance with its National Pollutant Discharge Elimination System (NPDES) permit and the outfall is working well. The reconfigured outfall should be incorporated into any planned improvements.
  - Two elements (actions) that would affect the City WWTP – City levee removal below the State Route (SR) 24 bridge and Drainage Improvement District (DID) 1 levee setback.
  - Identify how far downstream DID 1 will extend? *(Longer could block off floodplain. Need to keep it from backwatering SR 24 and then beyond that it is an open question. End of Riverside Road is where the minimum levee setback would occur. There are three properties below Riverside Road that may require some other protection.*)
  - Describe the current plan and sequence of activities. Sequencing is a big item—how and when will project elements be constructed?
  - Two existing constrictions currently affect the WWTP—SR 24 Bridge and the end of the City's levee. When and how will the City levee be reconfigured? (*Discussed potentially taking a portion of the material off the City levee to*

build the upstream levee coming off the bridge – this proposed action could protect the outfall and the WWTP and, additionally, opens the river into the floodplain. County has old SR 24 ROW that could also be used as fill material.)

- Address how the project will help the outfall channels to remain open (i.e., fill-in will not occur a result of any restoration actions). Peak discharge capacity will need to be maintained. (*Note: the City plans to install two 42"-inch pipes with fish passage barriers below to keep pipes charged.*)
- Address surface water quality impacts such as river temperature, PH, and dissolved oxygen (DO) issues. Coordinate with the Washington State Department of Ecology. Are we taking dissimilative capacity out of the river? (Fixing the morphology improves the assimilative capacity of the river, and helps avoid expensive treatment at the plant. Also provides more habitat for plants and animals, along with improving water quality.)

- Describe restoration efforts around the SR 24 Bridge and any potential effects on the City's force main that crosses next to SR 24 Bridge. (Plan to remove old prism on upstream side of bridge and build new berm on downstream side of bridge that protects the City plant)
- Describe potential effects to recreation facilities including:
  - Greenway trail. Second and third phases could be included. Explain why projects will be implemented in phases and why some are included or not included within a particular phase. Note that the lower trail could fail any time.
  - Arboretum. Will the improvements drop the water table, or affect wetlands and other vegetation? Consider whether there will be similar potential affects in Sportsman State Park.
  - Sunrise Rotary Park/McGuire Community Playground structures upstream of Terrace Heights (this facility shouldn't be affected).
  - Greenway improvements upstream of the Terrace Heights bridge will be addressed through a separate Yakima County east/west connector project on the Boise Cascade property.
- Consider any potential effects on stormwater handling. Stormwater outfalls could be affected, depending upon the way the river configuration changes. There is one

outfall into Buchanan Lake. City stormwater plan is to reduce flows into surface waters, by discharge into ground as much as possible.

- Consider air and noise effects from construction.
- U.S. Environmental Protection Agency (EPA) Office of Research & Development has a Regional Applied Research Efforts (RARE) grant to study how groundwater (nitrate levels) improves as restoration occurs. The first year of the grant involves collecting data on background levels. City WWTP wells (nine) plus many other monitoring wells will be used to establish baseline. EPA Region X has map of wells. Obtain a summary of their working hypothesis and document it.
- Acknowledge broader City interest in flood reduction to not only protect the WWTP plant and the lower part of the Gap to Gap Reach but also to acknowledge that the federal project levee system protects the City and the area surrounding the YMCA.

Technical Questions Raised by the City

- When and how the City levee gets removed is a key consideration (*Northwest Hydraulic Consultants (NHC) to look at this and provide guidance on when and how is it advisable to address modifications to the City's levee*).
- Better to destabilize river by doing multiple activities simultaneously, or to phase and better potentially control effects? (*NHC to help answer this question*). Potential risk is to head cut into the pits. Need implementation plan.
- How far down does DID #1 levee extend? Longer could block off floodplain. The need to keep it from backwatering SR 24 and then beyond is an open question. (*NHC can help answer this question*). End of Riverside Road is where the minimum levee setback would need to extend to.
- The Blue Slough restoration (i.e., reintroducing riverine flow into Blue Slough) a part of the environmental review scope? This is in discussion with Reclamation in a separate meeting (see notes from that meeting below).
- Terrace Heights and Victory Lane improvements are tied together. There are several planned improvements at Terrace Heights bridge, including signalization and turn lane widening. The floodplain improvements in this area could be tied to the Terrace Heights road/bridge improvements; or to the east/west connector project.

Information Follow Up

- Collect information on Terrace Heights bridge and road improvements.
- For recreation impacts to Greenway trail, see RCO Grant Application and Laura Moxom letter. Second and Third phases of the Greenway Trail project could be included.
- City to provide stormwater master plan and mapping (once available later in summer 2013). AKEL Engineering out of Fresno, California is doing this work.
- County developing mapping for floodplain, inundation, etc.
- EPA Region X has map of groundwater monitoring wells. Obtain a summary of their working hypothesis for the restoration-related research effects on groundwater quality, and document it.

WSDOT (JASON SMITH AND SEVERAL OTHERS)

- Washington State Department of Transportation (WSDOT) has 300 to 500 acres of property in the Gap to Gap Reach. It intends to use these properties to address flood risks to their facilities, and mitigate for current and future actions. They are considering a range of partners, including the County, Yakama Nation, Washington Department of Fish and Wildlife (WDFW) and others to receive and manager the WSDOT properties for long-term habitat restoration and protection uses. Property uses needs to show a benefit to WSDOT (e.g. reduction in flood risk to Interstate 82 [I-82]). WSDOT also has property at Union Gap that could be a possible source of future mitigation.
- To this end, WSDOT is working on a vision document for Gap to Gap. As part of this effort, WSDOT would like to develop a partnership plan with County for specific Gap to Gap improvements.
- WSDOT is also working with the County on a Yakima/Terrace Heights east/west connector plan. How this is incorporated into the Gap to Gap project needs consideration.

Coordination with WSDOT

- Send environmental review documentation to both WSDOT planning and Jason's group.

- Coordinate with WSDOT on the Boise cascade property and associated east/west connector plan – interrelated actions connection with Gap to Gap restoration. The EA planned for having connection to floodplain project (Gap to Gap), to help create a self-mitigating system and keep the environment review under an EA (i.e., not be elevated to an Environmental Impact Statement [EIS]); WSDOT suggested that they would prefer to see the Terrace Heights bridge element of the Gap to Gap project tied to the east/west connector project rather than an element of the U.S. Army Corps of Engineers (USACE)-funded Section 1135 project.
- Will need to include the Federal Highway Administration (FHWA) in the conversations about the project at some point for coordination on NEPA.
- SR 24. What maintenance agreement needs to be put in place to operate and maintain the levee? (USACE needs a permanent easement).
- I-82 flood risk mitigation. FHWA memo indicated that obtaining certification for flood protection for I-82 is not likely. In I-82 construction, WSDOT buried the federal levee through an easement agreement in the 1960s.

Information Follow Up

- 1974 document that USACE put together showing 100 and 200 year flood elevations.
- Obtain past environmental review documents and associated discipline reports from WSDOT for Union Gap interchange and SR 24 bridge
- Obtain WSDOT vision document for Gap to Gap

RECLAMATION (CANDY MCKINLEY, KEITH MCGOWAN, TIM MCCOY, JOEL HUBBLE, JEFF GRAHAM)

Discussion Topics

- Roza Wasteway and adult passage barrier– need to know if this action is to be included in the County Gap to Gap environmental review and, if so, what reconfiguration Reclamation needs. Related to reconfiguration options, Yakima River flows during spring runoff need to be evaluated for a drop structure option to determine whether at high flows and with a reconfigured floodplain there would be enough drop to prevent adult passage near the mouth of the shortened wasteway without backwatering the power plant and affecting power generation.

- Victory Lane setback could also indirectly affect Blue Slough hydrology.
- Blue Slough – Would involve pulling culverts, opening causeways, enhancing flows and making other habitat improvements in the upper part of the slough. Carp and bass exist in the slough. There are also low oxygen/high organics areas in waterway that will have some short term effects once rewatered.
- County/USACE easement on Reclamation property to allow for removal of existing levees and constructing new levee setback.
- Central Pre-mix—bottom of their property—may need to reconfigure about 600 feet of Blue Slough, moving it slightly west. (*County will work with Central Premix to provide them assurance that their participation in the project won't violate their permit conditions.*)
- Reclamation owns around 700 acres in Gap to Gap. The plan is to restore river and habitat on this property and then have Yakima project office manage over the long-term; if the Greenway trail is allowed on this property, then Reclamation will look to finding someone else to maintain (see County Greenway Master Plan which allows for preservation instead of public access).
- Yakima WWTP is early in the sequencing of projects.
- Provide description of the Roza Wasteway actions to Candy et. al (including early involvement with Walt Larrick).
- Reclamation could be a National Environmental Policy Act (NEPA) cooperating agency either for the entire project or just those portions of the project that affect Reclamation lands.
- County may also access FHWA funding for implementation around Terrace Heights bridge.
- Candy and Jeff are leads for Reclamation on this project.

Information Follow Up

- Reclamation has cultural resource surveys, terrestrial habitat/plant assessments, fish passage barrier and screening assessment for Blue Slough.
- County has information on the ponds and fish/water quality assessments.
- What Yakima River flows are needed to keep Roza wasteway and adult passage barrier operational?

MEETING WRAP UP DISCUSSION WITH COUNTY

Topics that need addressing

- East/west connector relationship to Gap to Gap
- Roza wasteway – in or out? If in, how to include it?
- Terrace Heights bridge widening approach
- Inclusion of the Boise Cascade property?
- Approach for addressing headcuts at ponds and channel dynamics below the SR 24 bridge
- County has a preference for levee removal in winter (when water table is much lower)