SKAGIT RIVER FLOOD RISK MANAGEMENT GENERAL INVESTIGATION
SKAGIT COUNTY, WASHINGTON
CONCURRENT REVIEW SUMMARY & SCOPE/SCHEDULE/BUDGET FOR STUDY COMPLETION
3 March 2015

OVERVIEW:

- Concurrent review summary: 237 ATR, 16 IEPR (5 with high significance), and 17 HQ legal/policy comments (over 23 pages). Public review complete.
- Common theme across reviews: uncertainty regarding appropriate level of detail and risk informed decision making for Draft FR/EIS under SMART Planning. General comment themes from public review: transfer of risk outside urban areas/residual risk, Baker Dam measure (both for and against), lack of final mitigation plan.
- NWS identified areas to reduce scope/cost, acknowledging associated risk. Based on October 2014 design charette, vertical team determined not to accept risk, resulting in increase to scope/schedule/budget to meet Civil Works Review standard.
- Additional work has been scoped to fully address the "level of detail" comments. That necessary scope was confirmed at the October 2014 design charette and the budget/schedule for that agreed upon scope was developed following the charette.
- Current understanding that Final FR/EIS based on discussion at the October 2014 design charette, which included consideration of concurrent review comments. Final FR/EIS will meet Corps policies concerning sufficient level of engineering and design detail to have confidence in cost estimates and ability to implement the project within the Section 902 authorized cost.
- Total budget to complete study now estimated at $1.89 million (fed portion $619k; non-fed portion $810k).
- Schedule to complete: Chief's Report by CYE 2016, with NWD transmittal of final FR/EIS in FY16 Q4.

Summary of Scope & Budget details

Civil Engineering
Cost: $447k to complete study
Tasks/activities: survey contract ($150k), prepare feasibility-level design plan set for NED plan (base plan set and plans for over 13 miles of flood risk management measures), design team coordination
Applicable comments:
ATR (9 comments):

- Civil reviewer comments referred back to ER 1110-2-1150 Appendix C for engineering elements during feasibility. Addressing comments requires tasks/activities such as: updated survey, preliminary design drawings depicting engineering requirements and correlation with required real estate; budget assumes 98 plan sheets and one designed cross-section for each of the 13 levee reaches, using cross-section(s) most typical for that specific reach.

Hydraulics & Hydrology
Cost: $135k to complete study
Tasks/activities: 1-D & 2-D modeling of recommended plan and hydraulic design, support economic analysis, support environmental coordination & mitigation plan, GIS maps
Applicable comments:
ATR (29 comments):

- All but one comment flagged critical since all modeling for recommended plan was not complete – beyond a sufficient level of detail to support SMART planning and the HEC-FDA economic analyses needed to determine the recommended plan for a draft FR/EIS - and hydraulic appendices in draft FR/EIS did not discuss the recommended plan.

HQ:

- Comment 15 - Add clarifying language about risk and uncertainty of H&H modeling and plan formulation decisions.

Cost Engineering
Cost: $98k to complete study
Tasks/activities: prepare Class 3 cost estimate (minimum estimate classification required for current phase per ER 1110-2-1302), certification of cost estimate, cost & schedule risk analysis. (Note: current construction cost estimate has contingency of 32%.)
Applicable comments:
ATR (27 comments):

- Comments focused either on mismatches between design information (e.g., differing lengths of levee calculated by Soils and Civil) or about details and assumptions used in MII.

Geotechnical Engineering
Cost: $80k to complete study
Tasks/activities: establish levee sections, analyze settlement, slope stability and seepage; levee failure analysis for with project conditions; support environmental coordination and mitigation plan; revise index points & damage reaches for economic and H&H models; support economic analysis and HEC-FDA updates
Applicable comments:
ATR (19 comments):

- Add details to Geotechnical Appendix (e.g. borrow sites, concrete production sites, summary of geotechnical investigations completed, summary of geotechnical investigations that should be completed, excavatability of soils, and descriptions of construction techniques). Comments referenced ER 1110-2-1150 as resource that required the elements that were commented upon.

IEPR:

- Comment 4 (high) - analysis of direct and cumulative effects and risks of an overtopping flood event; comment 5 (high) - geotechnical risk assessment of soil strength parameters; comment 8 (med/high) - investigate previous levee failures with potential solutions; comment 9 (med/high) – quantify specific and cumulative effects of recommended plan on sediment transport; comment 10 (med/high) - analyzing levee settlement and sediment deposition is required; comment 11 (med/high) - evaluate soil strength parameters used and seismic criteria, perform seepage analysis to confirm the assumed usage of seepage berms, sheet pile, or other cutoff trenches.

Structural Engineering
Cost: $44k to complete
Tasks/activities: size floodgates & floodwalls for cost estimating
Applicable comments: N/A – no specific ATR, HQ or IEPR comments.

Environmental Coordination (including cultural resources)
Cost: $248k to complete study

- significant risks associated with ESA consultation, mitigation requirements, and tribal treaty rights and trust responsibilities

Tasks/activities: prepare ESA documentation and consultation; mitigation model development, plan, and approval process; write ROD; complete Section 106 consultation
Applicable comments:
ATR (16 comments):

- Revise EIS formatting to meet requirements; add clearer significance determinations, concerns with: future w/o project definition, effects on riparian habitat from bank protection and ETL 1110-2-583, elimination of levee setback alternative, developing mitigation plan and obtaining environmental compliance.

HQ:

- Comment 6 - Prepare Monitoring and Mitigation Plan in accordance with WRDA Implementation Guidance; comment 12 - no quantification of impacts in DFR/EIS; comment 13 - revise 404(b)(1) analysis (mitigation and actual impacts need to be added); comment 16 - unclear what "adverse impact" to wetlands will be.

IEPR:

- Comment 13 (med/high) - Additional analysis and documentation of indirect and cumulative effects of recommended plan on lower river, delta, and estuary ecosystems and habitats; comment 14 (med) - continue to assess recommended plan's potential effects on existing or planned restoration projects in study area; comment 15 (med) –analyze/document potential effects on fisheries resources, determine potential mitigation for unavoidable impacts, continue to coordinate with stakeholders and tribes.

Project Management

Cost: $161k to complete study

Tasks/activities: includes PM, PgMgr, P2 scheduler, budget analyst, program analyst, tribal liaison; prepare waiver/exemption; upward reporting, coordination & communication with PDT, sponsor, and vertical team, prepare for and participate in remaining milestones, coordinate ATR, print documents and mailing

Applicable comments:

HQ:

- OC comment 1 - Clarify how study costs are being cost shared and date of execution; OC comment 2 - revise items of local cooperation for consistency with WRDA 2007; OC comment 3 - provide NFS letter of intent, statement of financial capability.

Real Estate

Cost: $157k to complete study

Tasks/activities: Real Estate Plan (REP) prepared per ER 405-1-12, land cost estimate (in lieu of gross appraisals), and rights of entry

Applicable comments:

ATR (6 comments):

- Provide final REP in format prescribed by ER405-1-12; justification of borrow and disposal materials as construction costs; provide RE Action Milestones Schedule (e.g. Gross Appraisal, Attorney Opinion of Compensability, etc.); attach NFS RE capability assessment to REP.

HQ:

- REP comments 1 through 16 - "Noncompliance with paragraph 12-16c(2) of ER 405-1-12." – comments describe specific actions needed to comply. Comment 17 – address acreage and cost discrepancies.

Plan Formulation

Cost: $145k to complete study

Tasks/activities: prepare waiver/exemption; revise and compile Final FR/EIS, coordination & communication with PDT, sponsor, and vertical team, prepare for and participate in remaining milestones, coordinate ATR, write Chief's Report

Applicable comments:

ATR (42 comments):

- Comments requiring additional detail and assumptions used for cost, environmental analyses in alternatives evaluation, documenting application of cited criteria to evaluate/compare final array, metrics on criteria used for measures and alternatives evaluations, potential consistency issues between early sections of FR/EIS and reference to alternative features in later sections, clarification of miscellaneous terms used.

HQ:

- Comment 1 - Prepare compliance documentation describing "Actions Taken" to resolve past concerns; comment 2.a. - add more discussion about NED plan formulation; comment 14 - revisit Public Involvement Appendix with District Counsel and consider revisions and redactions of information on the hearing sign in sheets and comment cards which may fall under Privacy Act rules.

IEPR:

- Comment 1 (high): ensure text is consistent throughout plan formulation sections to describe the study objectives and how the PDT evaluated/compared alternatives.

Economics
Cost: $74k to complete study
Tasks/activities: HEC-FDA modeling & separable elements analysis (including upstream reach for analysis of Baker measure), evaluation of residual risk and induced flood risk, EO 11988 compliance documentation
Applicable comments:
ATR (104 comments) –

- Lack of rough order of magnitude of costs information to support screening of some measures/alternatives.
- Comments regarding additional info needed about the recommended alternative (justify separable measures; use current price levels; lacking OSE and RED analysis; measures to address residual and induced flood damages per ER 1105-2-100; induced/residual flood risk to Sedro-Woolley; consider larger plans as there are still increases in benefits).
- Multiple comments regarding inputs to HEC-FDA model; agricultural damages and model approval; additional details/clarification of existing and future without project conditions; use of risk terminology; consistency between economics appendix and main report.

HQ:

- Comments focus on additional information or clarification needed for population estimate (comment 3), revised price level (comment 4); transportation delay (comment 5), induced flooding (comment 7), need to fully document EO11988 compliance (comment 8); agricultural losses (comment 9); add more justification of why certain depth damage curves used (comment 10); additional data on NED plan screening (comment 11).

IEPR:

- Comment 2 (high): Need incremental justification of separable elements and identification of all relevant NED costs to determine the NED plan; comment 6 (med/high): will add complete analysis of life safety risks associated with existing, future without-project and future with-project conditions in final report; comment 7 (med/high): additional documentation of residual and induced risk; comment 16 (med/low) – add comprehensive plan to communicate residual risk and expected flood damages to public (will be based on additional hydraulic and economic modeling).

Other costs by discipline:
HTRW (complete Phase I assessment), specs/contracting (award survey contract and technical editor), design integration team specialist; totaling $53k to complete study.

General scope application to all PDT disciplines:
Includes reviews, comment responses, and necessary document updates (PDT, DQC, and estimate for ATR of additional/new products) before CWRB; CADD fees for engineering disciplines; PDT meetings and coordination, including participation in Cost & Schedule Risk Analysis meeting; supervisory/oversight; Dr. Checks support; preparation and attendance at milestone meetings (as necessary by discipline); and scoping PED.