

**ARMY CIVIL WORKS PROGRAM
FY 2015 WORK PLAN -- INVESTIGATIONS**

STATE	DIVISION	BL	STUDY OR PROGRAM	PHASE 1/	PRESIDENT'S BUDGET AMOUNT	STATEMENT OF MANAGERS AMOUNT	ADDITIONAL WORK PLAN AMOUNT	STATEMENT OF MANAGERS AND WORK PLAN TOTAL AMOUNT	LINE ITEM OF ADDITIONAL FUNDING 1/	SUMMARY OF WORK TO BE ACCOMPLISHED WITH TOTAL AMOUNT
AK	POD	NAV	ALASKA REGIONAL PORTS (ARCTIC DEEP DRAFT), AK	F	50,000	50,000		50,000		Complete feasibility study
AK	POD	NAV	ANCHORAGE HARBOR DEEPENING (COOK INLET DEEP DRAFT NAVIGATION), AK	F			50,000	50,000	5	Complete scoping for feasibility study
AK	POD	NAV	CRAIG HARBOR, AK	F	300,000	300,000		300,000		Continue feasibility study
AK	POD	NAV	PORT LIONS HARBOR, AK	P	300,000	300,000		300,000		Complete Preconstruction Engineering and Design and financially close out the study phase
AR	MVD	ENR	WHITE RIVER COMPREHENSIVE - LOWER CACHE	F	150,000	150,000		150,000		Complete feasibility study
AR	SWD	NAV	THREE RIVERS, AR	F			150,000	150,000	6	New Start: Initiate feasibility study
AZ	SPD	FRM	LITTLE COLORADO RIVER (WINSLOW), AZ	F	751,000	651,000		651,000		Continue feasibility study
AZ	SPD	FRM	LOWER SANTA CRUZ RIVER, AZ	R/F	200,000	200,000	100,000	300,000	2	Initiate feasibility study
CA	SPD	ENR	DRY CREEK (WARM SPRINGS DAM) AND COYOTE VALLEY DAM RESTORATION	F	200,000	200,000	100,000	300,000	9	Initiate feasibility study
CA	SPD	ENR	YUBA RIVER FISH PASSAGE, CA (ENLEBRIGHT & DAGUERRE POINT DAMS)	F	200,000	200,000	100,000	300,000	9	Initiate feasibility study
CA	SPD	FRM	CALIFORNIA COASTAL SEDIMENT MASTER PLAN, CA	F	449,000	449,000		449,000		Complete feasibility study
CA	SPD	FRM	LOWER CACHE CRK, YOLO CNTY, WOODLAND & VIC, CA	F	800,000	800,000		800,000		Continue feasibility study
CA	SPD	ENR	ALISO CREEK, CA	F	717,000	717,000		717,000		Complete feasibility study
CA	SPD	ENR	ARROYO SECO, CA	F	450,000	450,000		450,000		Complete feasibility study
CA	SPD	FRM	AMERICAN RIVER COMMON FEATURES, CA (NATOMAS)	P	675,000	675,000	825,000	1,500,000	2	Continue Preconstruction Engineering and Design
CA	SPD	FRM	CARPINTERIA SHORELINE STUDY, CA	F			50,000	50,000	1	Complete rescoping for feasibility study
CA	SPD	FRM	CORTE MADERA CREEK, CA (GENERAL REEVALUATION REPORT)	F			400,000	400,000	2	Continue General Reevaluation Report through the Tentatively Selected Plan milestone
CA	SPD	FRM	COYOTE & BERRYESSA CREEKS, CA (BERRYESSA CREEK)	P	230,000	230,000	370,000	600,000	2	Complete Preconstruction Engineering and Design and financially close out the study phase
CA	SPD	FRM	SACRAMENTO RIVER BANK PROTECTION (GENERAL REEVALUATION REPORT)	F	500,000	200,000		200,000		Continue the General Reevaluation Report
CA	SPD	FRM	SAN FRANCISQUITO CREEK, CA	F	900,000	900,000		900,000		Continue feasibility study
CA	SPD	FRM	WESTMINSTER (EAST GARDEN GROVE) WATERSHED, CA	F	452,000	452,000	340,000	792,000	2	Complete feasibility study
CA	SPD	FRM	PAJARO RIVER AT WATSONVILLE, CA (GENERAL REEVALUATION REPORT)	F			700,000	700,000	2	Continue General Reevaluation Report through the Agency Decision milestone
CA	SPD	FRM	SAN DIEGO SHORELINE, CA	F			400,000	400,000	2	Continue feasibility study through alternatives milestone
CA	SPD	NAV	PORT OF LONG BEACH, CA	F	200,000	200,000	100,000	300,000	5	Initiate feasibility study
CA	SPD	NAV	REDWOOD CITY HARBOR, CA	F	579,000	579,000	21,000	600,000	5	Complete feasibility study
CO	NWD	ENR	ADAMS AND DENVER COUNTIES, CO	F	500,000	500,000		500,000		Continue feasibility study
CO	NWD	FRM	BOULDER, CO	R			50,000	50,000	2	Complete scoping for feasibility study
CT	NAD	FRM	FAIRFIELD AND NEW HAVEN COUNTIES (FLOODING), CT	F	100,000		300,000	300,000	2	New Start: Initiate feasibility study
CT	NAD	NAV	NEW HAVEN HARBOR DEEPENING, CT	F	100,000		100,000	100,000	5	New Start: Initiate feasibility study
DE	NAD	ENR	PINE KNOT, DE	F			342,000	342,000	9	Complete feasibility study
FL	SAD	NAV	JACKSONVILLE HARBOR, FL	P	3,150,000	3,150,000		3,150,000		Complete Preconstruction Engineering and Design and financially close out the study phase
FL	SAD	NAV	MANATEE HARBOR, FL	F	100,000		200,000	200,000	5	New Start: Initiate feasibility study
GA	SAD	FRM	SATILLA RIVER BASIN WATERSHED, GA	R/F	200,000	200,000	100,000	300,000	1	Initiate feasibility study
GA	SAD	ENR	PROCTOR CREEK, GA	F			300,000	300,000	9	New Start: Initiate feasibility study
HI	POD	ENR	WEST MAUI WATERSHED, MAUI, HI	F	1,040,000	1,040,000	134,000	1,174,000	9	Complete watershed study
HI	POD	FRM	WAIAKEA-PALAI, HI	F	153,000	153,000		153,000		Complete feasibility study
HI	POD	FRM	ALA WAI CANAL, OAHU, HI	F	120,000	120,000		120,000		Continue feasibility study with the potential for completion
HI	POD	NAV	HILO HARBOR MODIFICATIONS, HI	F	469,000	469,000		469,000		Complete feasibility study
IA	MVD	FRM	DES MOINES LEVEE SYSTEM, DES MOINES AND RACCOON RIVERS, IA	F			300,000	300,000	2	New Start: Initiate feasibility study
ID	NWD	FRM	BOISE RIVER, BOISE, ID	F	1,000,000	1,000,000		1,000,000		Continue feasibility study
IL	MVD	ENR	KASKASKIA RIVER BASIN, IL	F			50,000	50,000	8	New Start: Initiate feasibility study
IL	MVD	ENR	ILLINOIS RIVER BASIN RESTORATION - Ten Mile Creek	F	200,000	200,000		200,000		Continue restoration project feasibility efforts at Ten Mile Creek
IL	MVD	ENR	ILLINOIS RIVER BASIN RESTORATION - Fox River	F	200,000	200,000	200,000	400,000	8	Continue restoration project feasibility efforts at Fox River
IL	LRD	ENR	INTERBASIN CONTROL OF GREAT LAKES-MISSISSIPPI RIVER AQUATIC NUISANCE SPECIES, IL, IN, OH & WI (BRANDON LOCK)	F	500,000	500,000		500,000		Continue feasibility study of Brandon Lock
IL	MVD	ENR	ST. LOUIS MISSISSIPPI RIVERFRONT, MO	F			100,000	100,000	8	Continue feasibility study
IL	LRD	FRM	DUPAGE RIVER, IL	F	150,000		300,000	300,000	2	New Start: Initiate feasibility study
KS	NWD	FRM	UPPER TURKEY CREEK, KS	F			79,000	79,000	1	Complete feasibility study
LA	MVD	ENR	LOUISIANA COASTAL AREA ECOSYSTEM RESTORATION (MISSISSIPPI RIVER HYDRODYNAMIC MODEL/DELTA MANAGEMENT STUDY)	F	2,500,000	50,000		50,000		Continue Feasibility Mississippi River Hydrodynamic Model/Delta Management Study
LA	MVD	NAV	MISSISSIPPI RIVER, BATON ROUGE TO THE GULF, LA	F			200,000	200,000	5	Continue feasibility study
LA	MVD	NAV	INNER HARBOR NAVIGATION CANAL LOCK, LA (General Reevaluation Report)	F			539,000	539,000	6	Continue General Reevaluation Report
MA	NAD	NAV	BOSTON HARBOR DEEP DRAFT, MA	P	1,800,000	1,800,000		1,800,000		Continue Preconstruction Engineering and Design
MD	NAD	ENR	ANACOSTIA WATERSHED RESTORATION, MONTGOMERY COUNTY, MD	F	250,000	250,000		250,000		Complete feasibility study
MD	NAD	ENR	ANACOSTIA WATERSHED RESTORATION, PRINCE GEORGE'S COUNTY, MD	F	250,000	250,000		250,000		Complete feasibility study
MD	NAD	ENR	CHESAPEAKE BAY COMPREHENSIVE PLAN, MD, PA & VA	R	100,000	100,000		100,000		Complete reconnaissance study
MD	NAD	NAV	BALTIMORE HARBOR AND CHANNELS (50 FOOT), MD (GENERAL REEVALUATION REPORT)	F	600,000	600,000	199,000	799,000	5	Complete General Reevaluation Report
MI	LRD	FRM	ECORSE CREEK, MI (GENERAL REEVALUATION REPORT)	F			300,000	300,000	2	Complete General Reevaluation Report
MN	MVD	ENR	MINNESOTA RIVER WATERSHED STUDY, MN & SD (MINNESOTA RIVER AUTHORITY)	F	600,000	600,000		600,000		Continue watershed study
MO	NWD	ENR	MISSOURI RIVER DEGRADATION, MO	F	593,000	593,000		593,000		Complete feasibility study
MT	NWD	ENR	YELLOWSTONE RIVER CORRIDOR, MT	F	295,000	295,000		295,000		Complete feasibility study
NC	SAD	NAV	WILMINGTON HARBOR IMPROVEMENTS, NC	F	298,000	25,000		25,000		Complete feasibility study
ND	MVD	ENR	RED RIVER OF THE NORTH BASIN, ND, MN, SD & MANITOBA, CANADA	F	600,000	600,000	300,000	900,000	8	Continue progress on the comprehensive watershed management plan
NE	NWD	FRM	FREMONT, NE	F			425,000	425,000	2	Complete feasibility study
NH	NAD	ENR	MERRIMACK RIVER WATERSHED STUDY, NH & MA	F	700,000	700,000	124,600	824,600	9	Complete Upper Merrimack and Lower Merrimack River Basins studies
NJ	NAD	ENR	HUDSON - RARITAN ESTUARY, LOWER PASSAIC RIVER, NJ	F	52,000	52,000		52,000		Complete feasibility study
NJ	NAD	FRM	RAHWAY RIVER BASIN (UPPER BASIN), NJ	F			500,000	500,000	2	Continue feasibility study

NJ	NAD	FRM	PASSAIC RIVER MAINSTEM ABOVE DUNDEE DAM (GENERAL REEVALUATION REPORT)	F			490,000	490,000	2	Continue General Reevaluation Report
NM	SPD	ENR	ESPANOLA VALLEY, RIO GRANDE AND TRIBUTARIES, NM	F	300,000	300,000	315,000	615,000	8	Complete feasibility study
NM	SPD	ENR	RIO GRANDE BASIN, NM, CO & TX	F	300,000	300,000		300,000		Complete feasibility study
NM	SPD	FRM	MIDDLE RIO GRANDE FLOOD PROTECTION, BERNALILLO TO BELEN, NM (GENERAL REEVALUATION REPORT)	F	276,000	276,000	100,000	376,000	1	Complete General Reevaluation Report
NY	NAD	ENR	HUDSON - RARITAN ESTUARY, NY & NJ (Include HUDSON - RARITAN ESTUARY, HACKENSACK MEADOWLANDS, NJ)	F	202,000	202,000		202,000		Complete feasibility study
NY	NAD	FRM	WESTCHESTER COUNTY STREAMS, BYRAM RIVER BASIN, NY & CT	F			700,000	700,000	2	Continue feasibility study
NY	NAD	FRM	UPPER SUSQUEHANNA COMPREHENSIVE STUDY, NY	F			600,000	600,000	2	Continue feasibility study
OK	SWD	ENR	ARKANSAS RIVER CORRIDOR, OK	F			275,000	275,000	9	Continue feasibility study through alternatives milestone
OR	NWD	WS	WILLAMETTE RIVER BASIN REVIEW (13 RESERVOIR REALLOCATION)	F			450,000	450,000	8	Continue feasibility study
PA	NAD	NAV	DELAWARE RIVER DREDGED MATERIAL UTILIZATION, PA	F	200,000	200,000		200,000		Continue feasibility study
PR	SAD	NAV	SAN JUAN HARBOR CHANNEL IMPROVEMENT STUDY, PR	F	100,000		200,000	200,000	5	New Start: Initiate feasibility study
SC	SAD	NAV	CHARLESTON HARBOR, SC	F	695,000	695,000		695,000		Complete feasibility study
TX	SWD	ENR	JEFFERSON SHORELINE, TX	F			300,000	300,000	8	Continue feasibility study through alternatives milestone
TX	SWD	ENR	RESACAS AT BROWNSVILLE, TX	F			300,000	300,000	9	Continue feasibility study through alternatives milestone
TX	SWD	FRM	COASTAL TEXAS PROTECTION AND RESTORATION STUDY, TX	R/F	200,000	200,000	27,000	227,000	3	Complete reconnaissance study and initiate feasibility study
TX	SWD	NAV	GIWW, HIGH ISLAND TO BRAZOS RIVER, TX	P			700,000	700,000	6	Complete preconstruction engineering and design update to account for change in project conditions
TX	SWD	FRM	SABINE PASS TO GALVESTON BAY, TX	F	583,000	583,000		583,000		Continue feasibility study
TX	SPD	FRM	NORTHWEST EL PASO, TX	F	300,000	300,000	166,000	466,000	1	Complete feasibility study
TX	SPD	FRM	SPARKS ARROYO COLONIA, EL PASO COUNTY, TX	F	600,000	600,000		600,000		Continue feasibility study
TX	SWD	NAV	FREEPORT HARBOR, TX	P	1,200,000	1,200,000		1,200,000		Under review as a result of changed conditions.
TX	SWD	NAV	HOUSTON SHIP CHANNEL, TX	R/F	200,000	200,000		200,000		Continue feasibility study
TX	SWD	WS	SULPHUR RIVER BASIN REALLOCATION, TX	F	500,000	500,000		500,000		Continue feasibility study
VA	NAD	ENR	LYNNHAVEN RIVER BASIN, VA	P	600,000	600,000		600,000		Complete Preconstruction Engineering and Design and financially close out the study phase
VA	NAD	NAV	NORFOLK HARBOR AND CHANNELS, SOUTHERN BRANCH, VA (DEEPENING)	F	700,000	700,000		700,000		Complete feasibility study
WA	NWD	ENR	DUNGENESS RIVER, WA	F			300,000	300,000	9	New Start: Initiate feasibility study
WA	NWD	ENR	SKOKOMISH RIVER BASIN, WA	F	550,000	250,000		250,000		Complete feasibility study
WA	NWD	FRM	PUYALLUP RIVER, WA	F	500,000	500,000		500,000		Complete feasibility study
WA	NWD	FRM	SKAGIT R. WA/SKAGIT CO, WA	F	250,000	250,000		250,000		Complete feasibility study
WA	NWD	NAV	SEATTLE HARBOR, WA	F	200,000	200,000		200,000		Continue feasibility study
XX	LRD	FRM	OHIO RIVER BASIN (COMPREHENSIVE), OH, PA, WV, KY, TN, IN, IL, VA & AL				700,000	700,000	2	Initiate and complete Watershed Assessments per Section 729 of WRDA 1986, as amended by Section 202 of WRDA 2000 for: Muskingum River, French Broad River, Tennessee River, Allegheny River, and Guyandotte River.
XX	HQ	ENR	CHESAPEAKE BAY PROGRAM	XX	75,000	75,000	175,000	250,000	8	Coordination with Federal, state, local, and non-governmental agencies on Chesapeake Bay Protection and Restoration
XX	IWR	ENR	ENVIRONMENTAL DATA STUDIES	XX	75,000	75,000	24,400	99,400	9	Further development of a web-based geospatial data system that displays national ecological data
XX	IWR	FRM	FLOOD DAMAGE DATA PROGRAM	XX	220,000	220,000	115,000	335,000	1	Collect and maintain basic flood damage data to support research efforts and to inform specific project studies
XX	HQ	FRM	FLOOD PLAIN MANAGEMENT SERVICES	XX	8,000,000	8,000,000	2,500,000	10,500,000	1	Provide site-specific flood and flood plain data and assistance to State and local communities. Including to the Navajo Indian Nation in Arizona.
XX	HQ	HYD	FERC LICENSING	XX	200,000	200,000		200,000		Conduct reviews of Federal Energy Regulatory Commission (FERC) preliminary permit & license applications for development of hydroelectric power
XX	IWR	NAV	COMMITTEE ON THE MARINE TRANSPORTATION SYSTEM (CMTS)	XX	100,000	100,000	40,000	140,000	4	Fund Corps participation on the CMTS and support publication of related reports.
XX	ERD		AUTOMATED INFORMATION SYSTEMS SUPPORT/TRI CADD	XX	251,000	251,000		251,000		Develop and public geospatial standards
XX	ERD		ACCESS TO WATER DATA (TECH ASSIST - SEC 2017 WRDA 07)	XX	750,000	750,000		750,000		Provide access to water resources data and related water quality data to the public
XX	SPD	ENR	CALFED	XX	100,000	100,000		100,000		Continue program support, coordination, and USACE representation efforts in the Federal and State CALFED process.
XX	IWR	NAV	COASTAL FIELD DATA COLLECTION	XX	1,000,000	1,000,000	1,000,000	2,000,000	4	Operating and maintaining coastal field research facility to develop coastal flood data. Systematically measure, analyze, and assemble long-term coastal data that field offices use to accomplish the Corps mission in coastal navigation and storm damage reduction.
XX	HQ		COORDINATION WITH OTHER WATER RESOURCE AGENCIES	XX	398,000	500,000		500,000		Participation in the North American Waterfowl Management Program; National Estuary Program; and Regional Planning Bodies of the National Ocean Council. Review of environmental impacts resulting from installation of USDA project features. Review and determination of the flood control benefits of studies conducted by the Bureau of Reclamation for proposed Bureau of Reclamation projects.
XX	MVD	ENR	GULF OF MEXICO	XX	100,000	100,000		100,000		Participate in State and Federal interagency coordination focused on environmental restoration of the Gulf of Mexico
XX	HQ	FRM	HYDROLOGIC STUDIES	XX	243,000	243,000	500,000	743,000	1	Collect and study basic hydrologic data for major storm events or special hydrologic processes; Develop flood inundation data for improved real-time flood forecasting
XX	HQ & IWR		INTERAGENCY AND INTERNATIONAL SUPPORT (INCLUDING DUTCH AND JAPAN MOA'S AND UNESCO)	XX	400,000	350,000		350,000		Support other Federal agencies, international organizations and foreign governments to address problems of national significance, and to collaborate with these entities on water resources issues
XX	HQ		INTERAGENCY WATER RESOURCE DEVELOPMENT	XX	721,000	955,000		955,000		Coordinate with potential non-Federal sponsors.

XX	HQ	FRM	INTERNATIONAL WATER STUDIES	XX	150,000	150,000		150,000		Participation in and support of boundary water treaties and related international agreements between the United States and Canada.
XX	IWR	FRM	INVENTORY OF DAMS	XX	400,000	400,000		400,000		Maintain and administer the National Inventory of Dams database and web site.
XX	SPD	ENR	LAKE TAHOE	XX	100,000	100,000		100,000		Continue full active participation in Lake Tahoe Federal Interagency Partnership activities
XX	IWR	FRM	NATIONAL FLOOD RISK MANAGEMENT PROGRAM	XX	5,000,000	5,000,000		5,000,000		Continue flood risk management coordination actions and plan development at the National, Regional and State levels and participate in state level intergovernmental teams to support states and local communities address flood hazard mitigation priorities.
XX	IWR	FRM	NATIONAL SHORELINE MANAGEMENT STUDY	XX	400,000	675,000		675,000		Support the Coastal Systems Portfolio Initiative
XX	NWD	ENR	PACIFIC NW FOREST CASE	XX	10,000	10,000		10,000		Assist the Mt. Baker National Forest on removal of an unstable and abandoned high head dam on Rocky Creek near Baker Lake with is a tributary of the Skagit River
XX	HQ		PLANNING ASSISTANCE TO STATES	XX	3,500,000	5,000,000		5,000,000		Provide planning and technical assistance to States and local communities for a wide variety of water resource efforts, including watershed activities benefitting environmental restoration, flood risk management, and other watershed resources.
XX	HQ		PLANNING SUPPORT PROGRAM	XX	3,100,000	4,000,000	1,210,000	5,210,000	8	Support Planning Associates Program, Planning Centers of Expertise, and Planning Modernization efforts.
XX	HQ	FRM	PRECIPITATION STUDIES (NWS)	XX	225,000	225,000		225,000		Conduct hydro-meteorological studies coordination/support with the National Weather Service.
XX	ERD		REMOTE SENSING	XX	75,000	75,000		75,000		Provide technical support within USACE for remote sensing and GIS.
XX	ERD		RESEARCH AND DEVELOPMENT	XX	12,270,000	19,000,000	2,000,000	21,000,000	4	Investigate rapidly developing technologies and techniques that result in monetary savings, greater reliability, increased safety, enhanced efficiency, and environmental sustainability in planning, design, construction, operation and maintenance of Civil Works activities.
XX	ERD		SCIENTIFIC AND TECHNICAL INFORMATION CENTERS	XX	47,000	47,000		47,000		Gather and disseminate information as required by P.L. 99-802, Federal Technology Transfer Act of 1986
XX	HQ		SPECIAL INVESTIGATIONS	XX	1,350,000	1,350,000	1,000,000	2,350,000	8	Support efforts on requests from sources outside the Corps of Engineers, for information relating to unauthorized projects and other unauthorized and unfunded projects and/or activities, and which are not accomplished with a view toward determining whether a project can be developed. Provides \$25,000 per District to screen potential new feasibility studies.
XX	F&A	FRM	STREAM GAGING (USGS)	XX	550,000	550,000		550,000		Reimburse USGS for operation and maintenance of 2,500 stream gaging stations and data collection
XX	IWR	NAV	TRANSPORTATION SYSTEM	XX	385,000	929,000		929,000		Update and distribute shallow and deep-draft vessel operating costs guidance including investigation of life-cycle hull asset costing procedures and practices; update bunkerage costs; analyze load factor inputs and develop and certify various navigation models
XX	HQ		TRIBAL PARTNERSHIP PROGRAM	XX	1,500,000	2,500,000		2,500,000		Initiate, continue, and complete studies to address Tribal water resource needs and/or challenges.
Total					80,000,000	82,136,000	23,036,000	105,172,000		
Unallocated FY 2015 Work Plan Funding								16,828,000		
Grand Total						82,136,000	23,036,000	122,000,000		

1/ KEY:			Additional Funding	Total Allocations	Unallocated Funding	2014 work plan unallocated balance
1 =		FLOOD AND STORM DAMAGE REDUCTION	6,264,000	3,610,000	2,654,000	
2 =		FLOOD AND STORM DAMAGE REDUCTION (FLOOD CONTROL)	7,800,000	7,800,000	0	
3 =		FLOOD AND STORM DAMAGE REDUCTION (SHORE PROTECTION)	4,400,000	27,000	4,373,000	
4 =		NAVIGATION	5,000,000	3,040,000	1,960,000	
5 =		NAVIGATION (COASTAL AND DEEP-DRAFT)	4,100,000	1,070,000	3,030,000	
6 =		NAVIGATION (INLAND)	4,000,000	1,389,000	2,611,000	
7 =		NAVIGATION (SMALL, REMOTE, OR SUBSISTENCE)	2,200,000	0	2,200,000	1,388,000
8 =		OTHER AUTHORIZED PROJECT PURPOSES	4,100,000	4,100,000	0	
9 =		OTHER AUTHORIZED PROJECT PURPOSES (ENVIRONMENTAL RESTORATION OR COMPLIANCE)	2,000,000	2,000,000	0	
P =		Preconstruction Engineering & Design				
F =		Feasibility phase				
R =		Reconnaissance phase				