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# **STATEMENT OF WORK**

**Remediation Engineering Services for  
Plant 003 Dry Wells 20-08 & 34-07 Contaminated with PCBs  
Bethpage, New York**

**1999 Environmental Restoration Project  
Integrated Systems & Aerostructures Sector  
Northrop Grumman Corporation  
Bethpage, New York**

**revised: 4/27/99**

**Remediation Engineering Services for  
Plant 003 Dry Wells 20-08 & 34-07 Contaminated with PCBs**

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**Remediation Engineering Services for  
Plant 003 Dry Wells 20-08 & 34-07 Contaminated with PCBs  
Bethpage, New York**

**I - PURPOSE:**

Provide Remediation Engineering services to support the completion of the Environmental Restoration project located at the Northrop Grumman Corporation (NGC) Plant 003 facility in Bethpage, New York.

The goal of this project is to characterize the nature and extent of contamination released from dry wells 20-08 & 34-07, evaluate presumptive remedial alternatives, and to conceptually design a remedial action. Soils and possibly groundwater beneath these dry wells have become contaminated after 60 years of industrial use.

**II - INTRODUCTION:**

Plant 003 was a Government Owned, Contractor Operated (GOCO) facility that Northrop Grumman Corporation (NGC) elected to return to the NAVY. Plant 003 is part of the "105" Acre Naval Weapons Industrial Reserve GOCO property in Bethpage. The facility was transferred back to the Navy in the fall of 1998 after extensive environmental remediation and building restoration activities. The facility is presently owned and maintained by the NAVY. The Navy has authorized the transfer of the property to Nassau County. Nassau County has developed a Reuse Plan for the property which calls for redevelopment as industrial/commercial land use. NGC is responsible for performing the engineering services described herein as part of its Post-Termination agreement with the Navy. The Navy has agreed to perform the design, construction and operation, and monitoring of the remedial action selected by this study.

Northrop Grumman conducted Phase I and Phase II environmental site assessments of the Bethpage, Plant 003 facility. These investigations identified remediation needs for those locations where significant contamination above the comparison values were detected. Remediation is complete with the exception of several punchlist items, including dry wells 34-07 & 20-08.

The Project Engineer for Northrop Grumman will be Mr. Mark Hill. The secondary and supervisory Northrop Grumman contact will be Mr. Drew Bennett, P.E., Manager, Environmental Technology & Compliance. Northrop Grumman Corporation is defined as the OWNER for this Statement of Work. The successful bidder will be defined as the ENGINEER for this Statement of Work.

**Description and History of Dry Wells 34-07 & 20-08**

NGC has returned the 105-acre GOCO facility to the Navy and is completing post-termination efforts. The environmental remediation of the site is nearing completion and all that remains are several "punchlist" items identified in the Post Termination Responsibilities of the ENGINEER, modification P00009 to contract N00019-95-E-0043. One of those "issues" is the closure of dry wells 34-07 & 20-08.

Dry wells 34-07 and 20-08 have been found to be contaminated with PCBs. The two dry wells in question were inventoried, characterized and partially remediated under the Underground Injection Control program.

The closure of various types of "injection well" (dry wells, leaching pools or leaching chambers) is required pursuant to the Underground Injection Control (UIC) program administered by the Nassau County Department of Health (NCDH) and the U.S. Environmental Protection Agency (USEPA).

These two dry wells are part of the site's stormwater drainage system. The dry wells functioned as catch basins, with some stormwater infiltration capability and were also interconnected to other catch basins which ultimately discharged into the NAVY recharge basins within the 105 acres. One possible source of the PCBs is an Old Autoclave Area in Plant 03. This area contained a number of floor drains that were connected to the drainage system. The autoclaves were known to utilize oil containing PCBs, which were probably released during maintenance activities. The autoclaves and associated pumps, heat transfer equipment, and accumulation tanks were removed from the facility by 1984. The autoclaves were used for heat treatment of aircraft parts. The autoclave had a capacity of 5,000 gallons of PCB containing heat transfer fluid. The site of the potential source, and the depth of the contamination, suggest that it is not a small "transformer-like" PCB release.

### Summary of Characterization and Remediation to Date

In June 1998, the dry wells were excavated to depths feasible using a suitable shoring system. End point samples were collected. No significant contamination was detected in the end point samples except for PCBs. The applicable soil cleanup guideline is 10 mg/kg for protection of groundwater. The results are summarized below.

Feature	Remediation Interval (ft bgs)	Volume of Soil Excavated (yds <sup>3</sup> )	End Point Sample PCB Concentration (mg/kg)
Plant 03- Drywell 20-08	10-28	100	1,800
Plant 03- Drywell 34-07	6-28	325	25,000

On June 26, 1998, NGC transmitted these data to the NCDH and USEPA requesting no further action based on acceptable risk, technical impracticality, and extreme cost factors. The USEPA responded on August 4, 1998 to this request, stating that the dry wells should receive additional remediation to the soil cleanup criteria.

In anticipation of such a response, NGC proceeded with one soil boring through the center of each dry well. The soil was sampled continuously to the water table which is found at a depth of approximately 55 feet below land surface. This testing found PCB contamination to a depth of 56 feet at dry well 34-07 and 50 feet at dry well 20-08.

These data were submitted to the USEPA on September 14, 1998 with another request for no further action on the basis that additional remediation would be extremely costly and would result in minimal reduction of any health risk.

On December 8, 1998, the USEPA again denied NGC's request for no further action. The USEPA requested that NGC perform additional remediation via additional excavation or other innovative remediation technology.

The drainage system in the vicinity of 20-08 was restored in December 1998 because the interim system had exceeded its useful life and its failure presented a significant risk of spreading contamination. This drainage restoration resulted in the removal of additional contaminated soil in the 20-08 area.

The initial soil remediation was performed under the UIC program and inspected by the NCDH and USEPA. The Navy and NGC are in discussions with the agencies to identify a lead environmental agency for the problem.

In view of the fact that the Navy is already addressing similar environmental conditions pursuant to the aforementioned ROD (Navy Superfund site requirements), inclusion of the drywells in the Navy's Installation Restoration (IR) Program has been accepted. The NYSDEC Division of Environmental Remediation is the lead agency for that program.

### **III - DESCRIPTION OF WORK**

#### **TASK 1 - WORK PLAN**

The ENGINEER shall prepare a draft and final work plan. The work plan shall define the problem and describe all tasks to be performed, with particular attention to the field characterization activities. The work plan shall include a sampling plan that follows applicable NYSDEC guidance for such activities. The plan shall also define the technologies to be evaluated during the focused feasibility study. The work plan shall present a detailed project schedule which identifies key milestones and deliverables. Six copies of a preliminary draft work plan shall be presented to the NGC/Navy for comments. Fifteen copies of a draft work plan shall be prepared for submission to the agencies. Fifteen copies of a final work plan shall

be prepared for submission to the agencies. The ENGINEER shall be responsible for distributing all copies to appropriate parties.

## **TASK 2 - SITE CHARACTERIZATION**

The ENGINEER shall perform a site characterization study to define the extent of the PCB contamination in soil and in groundwater. For cost estimating purposes, the ENGINEER shall assume

- Two 65 foot deep soil borings with continuous split spoon sampling for dry well 34-07,
- Two 65 foot deep soil borings with continuous split spoon sampling for dry well 20-08,
- Installation and sampling of 4 new groundwater monitoring wells approximately 75 feet downgradient of the dry wells (1 new monitoring well cluster per dry well), and
- A plan view of the proposed soil boring and monitoring well locations are shown in the attached figure. A typical cross-section is also attached indicating the approximate well depth.

The ENGINEER shall provide and deploy immunoassay test kits for field screening of PCBs in soil. The ENGINEER shall provide capacity for 30 field tests. All soil samples shall be analyzed for PCBs via EPA method 8081. All water samples shall be analyzed via EPA Method 625, with a detection limit of not greater than 0.5-1.0 ppb. The ENGINEER shall be responsible for legally disposing all field investigation derived waste. NGC will provide available utility information; however, the ENGINEER shall be responsible for utility markouts. All lab data shall be generated based on a three week turn around with Class B deliverable. The ENGINEER shall prepare a Phase II report which summarizes the field data and the nature and extent of contamination. Six copies of a preliminary draft Phase II shall be presented to the NGC/Navy for comments. Fifteen copies of a draft Phase II shall be prepared for submission to the agencies. Fifteen copies of a final Phase II shall be prepared for submission to the agencies. The ENGINEER shall be responsible for distributing all copies to appropriate parties.

The Phase II report shall present all technical facts and be concise and to the point for agency and management review.

## **TASK 3 - EXPOSURE ASSESSMENT**

The ENGINEER shall perform an exposure assessment to determine an acceptable alternative cleanup level for PCBs and to quantify the risk left by the residual contamination. The exposure assessment shall consider the Nassau County Reuse Plan for the "105 Acre" property and identify potential receptors, pathways, and exposures and decide which pathways are complete. The ENGINEER shall determine exposure levels for each receptor.

Six copies of a preliminary draft Exposure Assessment shall be presented to the NGC/Navy for comments. Fifteen copies of a draft Exposure Assessment shall be prepared for submission to the agencies. Fifteen copies of a final Exposure Assessment shall be prepared for submission to the agencies. The ENGINEER shall be responsible for distributing all copies to appropriate parties.

#### **TASK 4 - FOCUSED FEASIBILITY STUDY**

The ENGINEER shall perform a focused feasibility study to evaluate and recommend a preferred remedial alternative. This study shall evaluate the cost-benefit of select remediation technologies. The study shall evaluate each technology with the respect to two soil cleanup standards (i.e. TAGM 4046 and exposure assessment based criteria) and one groundwater criteria. The study shall be focused and rely upon presumptive technology guidance where applicable and meet the requirements of the multiply regulatory agencies likely to review the document. The EECA format, if applicable, would be a suitable type format and provide appropriate evaluation criteria.

For soil media, the ENGINEER shall at a minimum evaluate excavation and disposal, and three innovative remediation approaches (e.g. high temperature vapor extraction, solvent extraction, solidification/vitrification). For groundwater media (if necessary), the ENGINEER shall evaluate natural attenuation monitoring, two innovative technologies for "hot spot" groundwater treatment for PCBs.

All technologies shall be cost estimated with an accuracy goal of plus/minus 15 percent. The study shall recommend a preferred remedial alternative.

Six copies of a preliminary draft Focused FS shall be presented to the NGC/Navy for comments. Fifteen copies of a draft Focused FS shall be prepared for submission to the agencies. Fifteen copies of a final Focused FS shall be prepared for submission to the agencies. The ENGINEER shall be responsible for distributing all copies to appropriate parties.

#### **TASK 5 - CONCEPTUAL DESIGN**

The ENGINEER shall develop the preferred remediation concept to a 15% design level. This effort shall summarize process diagrams, target areas and quantities for remediation, design criteria, appropriate regulations, performance data acquisition needs, and an implementation schedule. The ENGINEER shall also prepare a Scope of Work for turnkey remediation services to implement the remediation. This SOW would be utilized by the Navy to procure these services.

Six copies of a preliminary draft Conceptual Design Report shall be presented to the NGC/Navy for comments. Fifteen copies of a draft Conceptual Design Report shall be prepared for submission to the agencies. Fifteen copies of a final Conceptual Design Report

shall be prepared for submission to the agencies. The ENGINEER shall be responsible for distributing all copies to appropriate parties.

#### **TASK 6 - MEETINGS & WORKSHOPS**

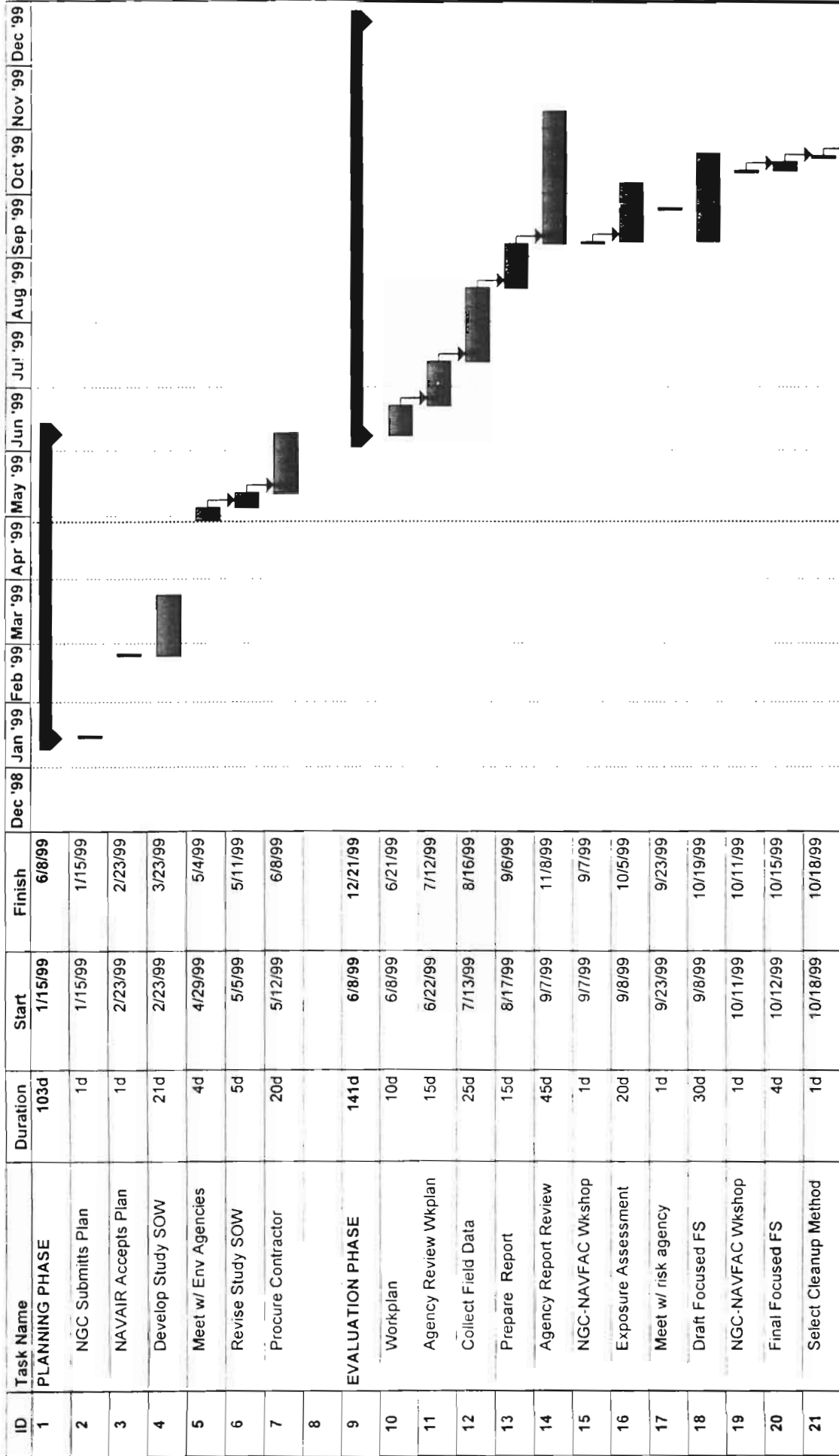
The ENGINEER shall assist NGC/Navy in communicating information and plans to the agencies. For cost estimating purposes, the ENGINEER shall assume weekly telecons with the NGC RE and 6 progress meetings at the Bethpage facility. The ENGINEER shall also assume 2 meetings in Albany, NY.

#### **TASK 7 - PROJECT CONTROL**

The ENGINEER shall provide monthly summaries of expenditures to date on the project and shall develop and maintain a detailed project schedule on Microsoft Project. The ENGINEER shall also assist the NGC in preparing and maintaining standard management briefings.



Plan for PCB Remediation  
 Plant 3 Dry Wells 34-07 & 20-08  
 Bethpage 105 Acre GOCO Property



Project: PCB UIC  
 Date: 4/28/99

Task: [Bar]

Progress: [Bar]

Milestone: [Diamond]

Summary: [Bar]

Rolled Up Task: [Bar]

Rolled Up Milestone: [Bar]

Rolled Up Progress: [Bar]

Plan for PCB Remediation  
 Plant 3 Dry Wells 34-07 & 20-08  
 Bethpage 105 Acre GOCO Property

ID	Task Name	Duration	Start	Finish	Dec '98	Jan '99	Feb '99	Mar '99	Apr '99	May '99	Jun '99	Jul '99	Aug '99	Sep '99	Oct '99	Nov '99	Dec '99
22	Pitch Method to Agencie	5d	10/19/99	10/25/99													
23	Respond to Comments	20d	10/26/99	11/22/99													
24	Develop Concept Design	20d	11/23/99	12/20/99													
25	Concept Design to Navy	1d	12/21/99	12/21/99													
26																	
27	REMEDATION PHASE	1d	12/22/99	12/22/99													
28	Government Responsibility	1d	12/1/99	12/1/99													

Project: PCB UIC  
 Date: 4/28/99

Task: [Redacted]

Progress: [Redacted]

Milestone: [Redacted]

Summary: [Redacted]

Rolled Up Task: [Redacted]

Rolled Up Milestone: [Redacted]

Rolled Up Progress: [Redacted]

Enclosure 2 - Hothrup Grumman Corporation, Drywell and Miscellaneous Remediation  
Drilling Program Sample Results.

Excavation/Structure 34-07

Parameter	Depth Below Grade Surface (feet)														NYSDEC Soil Cleanup Objective - 1
	30 - 32	32 - 34	34 - 36	36 - 38	38 - 40	40 - 42	42 - 44	44 - 46	46 - 48	48 - 50	50 - 52	52 - 54	54 - 56		
<b>PCBs (mg/kg)</b>															
AROCIOR 1016	12000	990	200	860	18	31	300	38	42	15	9	440	39		
AROCIOR 1221	<660	<33	<33	<33	<6.6	<6.6	<33	<6.6	<6.6	<6.6	<6.6	<33	<6.6		
AROCIOR 1232	<330	<16.5	<16.5	<16.5	<3.3	<3.3	<16.5	<3.3	<3.3	<3.3	<3.3	<16.5	<3.3		
AROCIOR 1242	<330	<16.5	<16.5	<16.5	<3.3	<3.3	<16.5	<3.3	<3.3	<3.3	<3.3	<16.5	<3.3		
AROCIOR 1248	<330	<16.5	<16.5	<16.5	<3.3	<3.3	<16.5	<3.3	<3.3	<3.3	<3.3	<16.5	<3.3		
AROCIOR 1254	<330	<16.5	<16.5	<16.5	<3.3	<3.3	<16.5	<3.3	<3.3	<3.3	<3.3	<16.5	<3.3		
AROCIOR 1260	<330	<16.5	<16.5	<16.5	<3.3	<3.3	<16.5	<3.3	<3.3	<3.3	<3.3	<16.5	<3.3		
<b>Total PCBs:</b>	<b>12,000</b>	<b>990</b>	<b>200</b>	<b>860</b>	<b>18</b>	<b>31</b>	<b>300</b>	<b>38</b>	<b>42</b>	<b>15</b>	<b>9</b>	<b>440</b>	<b>10</b>	<b>10</b>	

Excavation/Structure 20-08

Parameter	Depth Below Grade Surface (feet)														NYSDEC Soil Cleanup Objective - 1
	29 - 31	31 - 33	33 - 35	35 - 37	37 - 39	39 - 41	42 - 44	44 - 46	46 - 48	48 - 50	50 - 52	52 - 54			
<b>PCBs (mg/kg)</b>															
AROCIOR 1016	1400	490	410	6	<3.3	<3.3	<3.3	<3.3	250	220	<3.3	<3.3			
AROCIOR 1221	<66	<66	<66	<6.6	<6.6	<6.6	<6.6	<6.6	<66	<66	<6.6	<6.6			
AROCIOR 1232	<33	<33	<33	<3.3	<3.3	<3.3	<3.3	<3.3	<33	<33	<3.3	<3.3			
AROCIOR 1242	<33	<33	<33	<3.3	<3.3	<3.3	<3.3	<3.3	<33	<33	<3.3	<3.3			
AROCIOR 1248	<33	<33	<33	<3.3	<3.3	<3.3	<3.3	<3.3	<33	<33	<3.3	<3.3			
AROCIOR 1254	<33	<33	<33	<3.3	<3.3	<3.3	<3.3	<3.3	<33	<33	<3.3	<3.3			
AROCIOR 1260	<33	<33	<33	<3.3	<3.3	<3.3	<3.3	<3.3	<33	<33	<3.3	<3.3			
<b>Total PCBs</b>	<b>1,400</b>	<b>490</b>	<b>410</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>250</b>	<b>220</b>	<b>0</b>	<b>0</b>	<b>10</b>		

<1> 10 ppm total for all PCBs

**SITE MAP - 105 ACRES**

