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U S NAVY RESPONSE TO REGULATOR COMMENTS TO IM WORKPLAN AREA OF CONCERN 569 (AOC 569) ZONE E WITH TRANSMITTAL CNC CHARLESTON SC
6/13/2003
CH2M HILL

AOC 569 Zone E
RtC on the IM workplan (R4)

CH2MHILL TRANSMITTAL

To: Jerry Stamps
South Carolina Department of Health and Environmental Control
Bureau of Land and Waste Management
2600 Bull Street
Columbia, SC 29201

From: Sam Naik/CH2M-Jones
(770) 604-9182 ext. 255

Date: June 13, 2003

Re: CH2M-Jones' Responses to Comments by EPA regarding the *Interim Measure Work Plan, AOC 569, Zone E, Revision 0*

Quantity	Description
4	CH2M-Jones' Responses to Comments by EPA regarding the CH2M-Jones' Responses to Comments by EPA regarding the *Interim Measure Work Plan, AOC 569, Zone E, Revision 0* – Originally Submitted on February 26, 2003

If material received is not as listed, please notify us at once.

Remarks:

Copy To:

Tim Frederick/Gannett Fleming, Inc., w/att
Dann Spariosu/USEPA, w/att
Rob Harrell/Navy, w/att
Gary Foster/CH2M-Jones, w/att

Comments Prepared by EPA on the *Interim Measure Work Plan, Soil Delineation and Excavation at E569SB005, AOC 569, Zone E, Revision 0,* Charleston Naval Complex (dated February 2003)

General Comment

In general the Interim Measure Work Plan is well written and technically sound. However, the Work Plan does not indicate that confirmatory sampling will be collected from the excavation walls and floor upon completion of the removal action. If the intention is to rely upon the pre-excavation delineation sampling to also serve as confirmatory bounding samples for the excavation, the text should include some discussion of this intent and any possible uncertainties.

CH2M-Jones Response:

The Interim Measure Work Plan for AOC 569 proposed additional delineation soil sampling as a preliminary step, to determine the extent of the excavation, prior to conducting the excavation. This delineation soil sampling was conducted by CH2M-Jones during March 2003.

Four soil borings were initially introduced outside a 10 ft x 10 ft footprint around E569SB005 where exceedances of the SSLs (with a DAF=1) for benzene, toluene, ethylbenzene and xylenes (BTEX) were detected during previous sampling conducted during March and April 2002. During the March 2003 sampling, petroleum odors were detected in the subsurface soil at some of these delineation sampling locations. Therefore, the sample locations were extended out farther. The final delineation samples were collected outside an area roughly 30 ft x 20 ft. Figure 1, which is attached to these comments, shows the approximate final delineation sample locations.

The BTEX detections from these samples are summarized in Table 1. The analytical results report and data validation summaries from this sampling event are also included in Attachment 1. A comparison of the detections against the COPC criteria as shown in Table 1, indicates that benzene detections in one surface soil sample (from E569SB010) and two subsurface soil samples (from E569SB008 and E569SB010) exceed the site-specific SSL for the unpaved scenario. The subsurface soil sample (collected from the 3 to 5-ft depth interval below ground surface at E569SB008) also exceeds the site-specific SSL for the paved scenario.

None of the surface soil samples showed exceedances of the SSL for the paved scenario. At two of the four delineation sample locations, BTEXs were not detected above laboratory detection limits, and none of the surface soil detections exceed the EPA Region III residential RBCs (with an HI=0.1). The soils are under pavement and are expected to remain under pavement. As part of the responses to EPA's comments on the RFI Report Addendum and CMS Work Plan for AOCs 569, 570 and 578 (CH2M-Jones, 2002), it was indicated that the proposed construction activities related to the realignment of Hobson Avenue would not impact this area. There is no direct exposure concern from these soils as long as land use controls (LUCs) are maintained to ensure that the soils are covered with pavement/buildings.

BTEXs were not detected above laboratory detection limits in six groundwater sampling events in wells E569GW001 and E569GW01D which were installed downgradient from E569SB005, indicating that groundwater is not being impacted by the detected soil concentrations of BTEXs at E569SB005.

Based on the above observations, no soil removal is necessary as part of the proposed interim measure for soil removal at AOC 569, since the soil concentrations are below the site-specific paved SSL, the soil is not impacting groundwater, the soils in this area will remain under pavement and this site will undergo LUCs requiring that it remain paved. This recommendation will be included in Revision 1 of the RFIRA/CMSWP for AOCs 569, 570 and 578, and the soil contamination from benzene will be addressed as part of the CMS Report for AOCs 569, 570, and 578.

Attachments

TABLE 1
Surface and Subsurface Soil Detections of Benzene, Ethylbenzene, Toluene and Xylenes
Interim Measure, AOC 569, Zone E, Charleston Naval Complex

Parameter	Sample ID	Station ID	Result (mg/kg)	Qualifier	Date Sampled	EPA Region III Residential RBC (HI=0.1)	EPA Region III Industrial RBC (HI=0.1)	Site-specific SSL (unpaved)	Site-specific SSL (paved)
Benzene	569SB00801	569SB008	0.0056	U	03/04/2003	NA	104	0.078	1.04
	569SB00901	569SB009	0.0096	=	03/04/2003				
	569SB01001	569SB010	**0.437**	J	03/04/2003				
	569SB01101	569SB011	0.0059	U	03/04/2003				
Ethylbenzene	569SB00801	569SB008	0.0056	U	03/04/2003	782	20,440	62	827
	569SB00901	569SB009	0.0066	=	03/04/2003				
	569SB01001	569SB010	9.33	=	03/04/2003				
	569SB01101	569SB011	0.0059	U	03/04/2003				
Toluene	569SB00801	569SB008	0.0056	U	03/04/2003	1,564	40,880	45	602
	569SB00901	569SB009	0.00048	J	03/04/2003				
	569SB01001	569SB010	0.0689	J	03/04/2003				
	569SB01101	569SB011	0.0059	U	03/04/2003				
Xylenes, Total	569SB00801	569SB008	0.0056	U	03/04/2003	15,640	408,880	882	11,801
	569SB00901	569SB009	0.0025	J	03/04/2003				
	569SB01001	569SB010	1.98	=	03/04/2003				
	569SB01101	569SB011	0.0059	U	03/04/2003				
Benzene	569SB00802	569SB008	0.0057	U	03/04/2003	NA	NA	0.078	1.04
	569SB00803	569SB008	**1.95**	J	03/04/2003				

TABLE 1
Surface and Subsurface Soil Detections of Benzene, Ethylbenzene, Toluene and Xylenes
Interim Measure, AOC 569, Zone E, Charleston Naval Complex

Parameter	Sample ID	Station ID	Result (mg/kg)	Qualifier	Date Sampled	EPA Region III Residential RBC (HI=0.1)	EPA Region III Industrial RBC (HI=0.1)	Site-specific SSL (unpaved)	Site-specific SSL (paved)
Benzene	569SB00902	569SB009	0.0011	J	03/04/2003	NA	NA	0.078	1.04
	569SB00903	569SB009	0.0081	J	03/04/2003				
	569SB01002	569SB010	0.0014	J	03/04/2003				
	569SB01003	569SB010	**0.805**	J	03/04/2003				
	569SB01102	569SB011	0.0058	U	03/04/2003				
	569SB01103	569SB011	0.0065	U	03/04/2003				
Ethylbenzene	569SB00802	569SB008	0.0057	U	03/04/2003	NA	NA	62	827
	569SB00803	569SB008	51.9	=	03/04/2003				
	569SB00902	569SB009	0.0058	U	03/04/2003				
	569SB00903	569SB009	0.0036	J	03/04/2003				
	569SB01002	569SB010	0.0557	=	03/04/2003				
	569SB01003	569SB010	55	=	03/04/2003				
	569SB01102	569SB011	0.00047	J	03/04/2003				
	569SB01103	569SB011	0.0065	U	03/04/2003				
Toluene	569SB00802	569SB008	0.0057	U	03/04/2003	NA	NA	45	602
	569SB00803	569SB008	0.773	J	03/04/2003				
	569SB00902	569SB009	0.0058	U	03/04/2003				
	569SB00903	569SB009	0.0012	J	03/04/2003				

TABLE 1
Surface and Subsurface Soil Detections of Benzene, Ethylbenzene, Toluene and Xylenes
Interim Measure, AOC 569, Zone E, Charleston Naval Complex

Parameter	Sample ID	Station ID	Result (mg/kg)	Qualifier	Date Sampled	EPA Region III Residential RBC (HI=0.1)	EPA Region III Industrial RBC (HI=0.1)	Site-specific SSL (unpaved)	Site-specific SSL (paved)
Toluene	569SB01002	569SB010	0.0055	U	03/04/2003	NA	NA	45	602
	569SB01003	569SB010	1.47	J	03/04/2003				
	569SB01102	569SB011	0.0058	U	03/04/2003				
	569SB01103	569SB011	0.0065	U	03/04/2003				
Xylenes, Total	569SB00802	569SB008	0.0057	U	03/04/2003	NA	NA	882	11,801
	569SB00803	569SB008	19	=	03/04/2003				
	569SB00902	569SB009	0.0058	U	03/04/2003				
	569SB00903	569SB009	0.0024	J	03/04/2003				
	569SB01002	569SB010	0.0161	=	03/04/2003				
	569SB01003	569SB010	151	=	03/04/2003				
	569SB01102	569SB011	0.0058	U	03/04/2003				
	569SB01103	569SB011	0.0065	U	03/04/2003				

J Indicates an estimated value. One or more quality control (QC) parameters were outside control limits or the value was detected below the laboratory's quantification limit.

U Indicates that the concentration was not detected.

NA Not Applicable

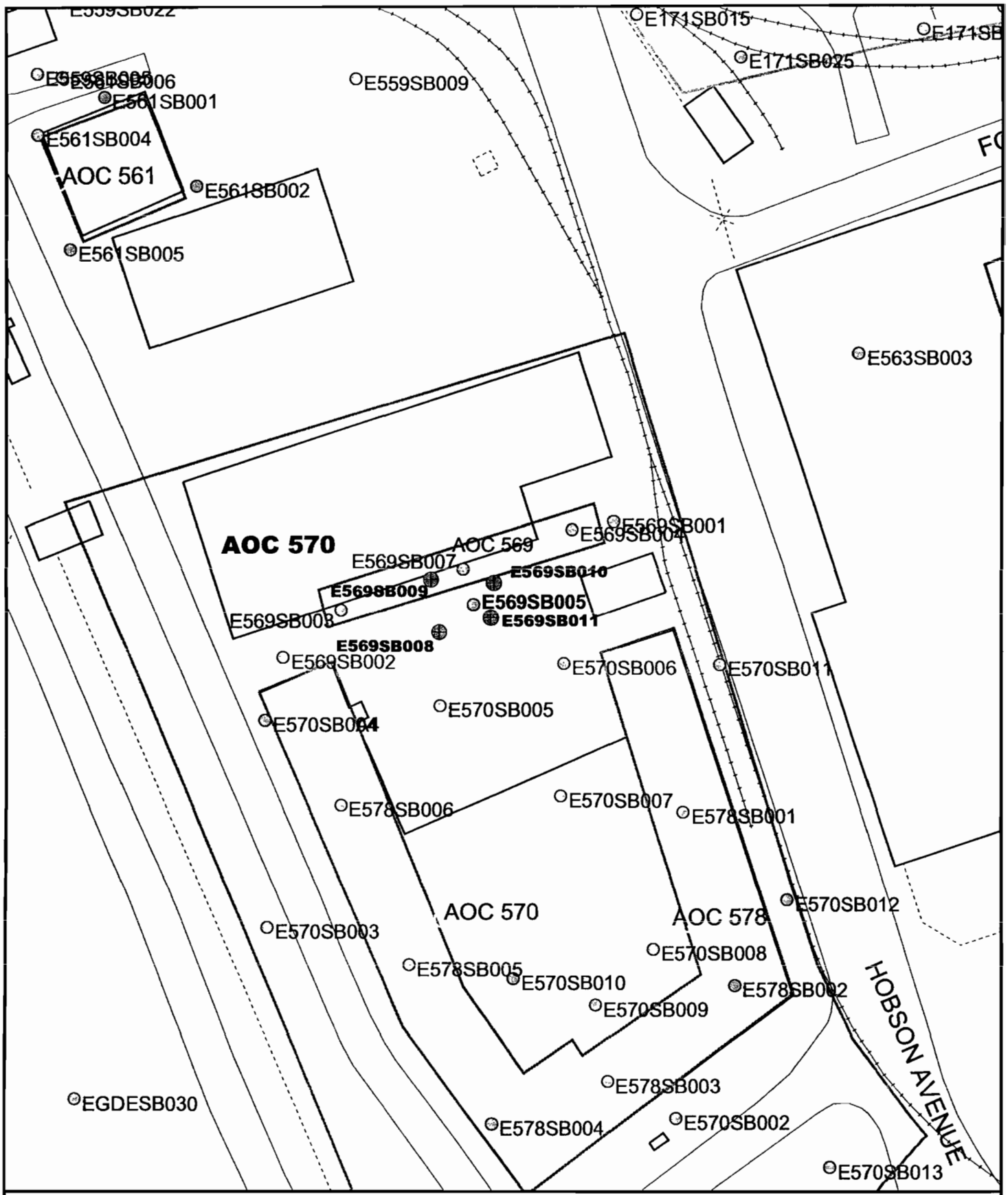

Figure 1
Delineation soil Sampling Locations
AOC 569 Interim Measure, Zone E
Charleston Naval Complex

CH2MHILL

File Path: c:\18gis\cnc\2003proj.apr, Date 09 May 2003 9:14, User SNAIK1

Data Validation Summary - Charleston Naval Complex - Zone E, AOC 569

TO: Sam Naik/CH2M HILL/ATL

FROM: Amy Juchem/CH2M HILL/GNA
Herb Kelly/CH2M HILL/GNA

DATE: May 2, 2003

The purpose of this memorandum is to present the results of the data validation process for the samples collected AOC 569 in Zone E. The samples were collected on March 4, 2003.

The specific samples and analytical fractions reviewed are summarized below in Table 1.

The Quality Control areas that were reviewed and the resulting findings are documented within each subsection that follows. This data was validated for compliance with the analytical method requirements. This process also included a review of the data to assess the accuracy, precision, and completeness based upon procedures described in the guidance documents such as the Environmental Protection Agency (EPA) *National Functional Guidelines for Inorganic Data Review (EPA 2002) and National Functional Guidelines for Organic Data Review (EPA 1999)*. Quality assurance/quality control (QA/QC) summary forms and data reports were reviewed.

Samples were submitted to General Engineering Laboratories, Inc., in Charleston, South Carolina, for the following analyses: SW-846 8260 Volatile Organic Compounds (VOC).

Sample results that were not within the acceptance limits were appended with a qualifying flag, which consisted of a single- or double-letter code that indicated a possible problem with the data. The qualifying flags originated during the data review and validation processes. These also include the secondary, or the two-digit "sub-qualifier" flags. The secondary qualifiers provide the reasoning behind the assignment of a qualifier flag to the data. The secondary qualifiers are presented and defined below.

Attachment 1 lists the changes in data qualifiers, due to the validation process.

The following primary flags were used to qualify the data:

[=] Detected. The analyte was analyzed for and detected at the concentration shown.

[J] Estimated. The analyte was present but the reported value may not be accurate or precise.

[U] Undetected. The analyte was analyzed for but not detected above the method detection limit.

[UJ] Detection limit estimated. The analyte was analyzed for but qualified as not detected; the result is estimated.

[R] Rejected. The data is not useable.

Secondary Data Validation Qualifiers

Code	Definition
2S	Second Source
2C	Second Column Confirmation
BL	Blank
BD	Blank Spike/Blank Spike Duplicate or (LCS/LCSD) Precision
BS	Blank Spike/LCS
CC	Continuing Calibration Verification
DL	Dilution
FD	Field Duplicate
HT	Holding Time
IB	In-Between (metals - B's → J's)
IC	Initial Calibration
IS	Internal Standard
LD	Lab Duplicate
LR	Concentration exceeded Linear Range
MD	MS/MSD or LCS/LCSD Precision
MS	Matrix Spike/Matrix Spike Duplicate
OT	Other (see DV worksheet)
PD	Pesticide Degradation
PS	Post Spike
RE	Re-extraction/Re-analysis
SD	Serial Dilution
SS	Spiked Surrogate
TD	Total vs Dissolved
TN	Tune

Table 1 - Chemical Analytical Methods – Field and Quality Control Samples

SDG	Station ID	Sample ID	Lab Sample ID	Matrix	Sample Type	Upper Depth	Lower Depth	Date Collected	VOCs SW8260B
75886	E569SB011	569SB01103	75886001	SO	N			03/04/03	X
75886	E569SB008	569SB00801	75886002	SO	N	0	1	03/04/03	X
75886	E569SB008	569SB00803	75886003	SO	N			03/04/03	X
75886	E569SB008	569SB00802	75886004	SO	N	3	5	03/04/03	X
75886	E569SB008	569CB00802	75886005	SO	FD			03/04/03	X
75886	E569SB009	569SB00901	75886006	SO	N	0	1	03/04/03	X
75886	E569SB009	569SB00903	75886007	SO	N			03/04/03	X
75886	E569SB009	569SB00902	75886008	SO	N	3	5	03/04/03	X
75886	E569SB010	569SB01001	75886009	SO	N	0	1	03/04/03	X
75886	E569SB010	569SB01003	75886010	SO	N			03/04/03	X
75886	E569SB010	569SB01002	75886011	SO	N	3	5	03/04/03	X
75886	E569SB011	569SB01101	75886012	SO	N	0	1	03/04/03	X
75886	E569SB011	569SB01102	75886013	SO	N	3	5	03/04/03	X
75886	LABQC	1200390740	1200390740	SQ	LB				X
75886	E569SB011	569SB01103MS	1200390741	SO	MS			03/04/03	X
75886	E569SB011	569SB01103SD	1200390742	SO	SD			03/04/03	X
75886	LABQC	1200390743	1200390743	SQ	BS				X
75886	LABQC	1200391817	1200391817	SQ	LB				X
75886	LABQC	1200391818	1200391818	SQ	BS				X
75886	LABQC	1200391819	1200391819	SQ	LB				X
75887	FIELDQC	569EB008N1	75887001	WQ	EB			03/04/03	X
75887	FIELDQC	569TB008N1	75887002	WQ	TB			02/20/03	X
75887	LABQC	1200390156	1200390156	WQ	LB				X
75887	LABQC	1200390159	1200390159	WQ	BS				X

MATRIX CODE

SO – Soil Samples
SQ – Soil QC Samples
WQ - Water QC Samples

SAMPLE TYPE CODE

BS - Blank Spike
EB - Equipment Blank
FD - Field Duplicate
LB - Laboratory Blank
N - Native Sample
MS – Matrix Spike
SD – Matrix Spike Duplicate
TB – Trip Blank

ANALYSIS CODE

VOC - Volatile Organic Compounds

Organic Parameters

Quality Control Review

The following list represents the QA/QC measures that were reviewed during the data quality evaluation procedure for organic data.

- **Holding Times** – The holding times are evaluated to verify that samples were extracted and analyzed within holding times.
- **Blank samples** – Method blanks, trip blanks and equipment blanks were provided for this project. Blank samples enable the reviewer to determine if an analyte may be attributed to sampling or laboratory procedures, rather than environmental contamination from site activities.
- **Surrogate Recoveries** – Surrogate Compounds are added to each sample and the recoveries are used to monitor lab performance and possible matrix interference.
- **Lab Control Sample (LCS)** – This sample is a "controlled matrix", either laboratory reagent water or Ottawa sand, in which target compounds have been added prior to extraction/analysis. The recoveries serve as a monitor of the overall performance of each step during the analysis, including sample preparation.
- **Matrix Spike/Matrix Spike Duplicate (MS/MSD) Samples** – Spike recovery is used to evaluate potential matrix interferences, as well as accuracy. Precision information is also determined by calculating the reproducibility between the recoveries of each spiked parameter.
- **GC/MS Tuning** – The mass spectrum of the tuning compound is evaluated for method compliance. The criteria are established to verify the proper mass assignment and mass resolution.
- **Initial Calibration** – The initial calibration ensures that the instrument is capable of producing acceptable qualitative and quantitative data for the compounds of interest.
- **Continuing Calibration** – The continuing calibration checks satisfactory performance of the instrument and its predicted response to the target compounds.
- **Field Duplicate Samples** – These samples are collected to determine precision between a native and its duplicate. This information can only be determined when target compounds are detected.
- **Internal Standards** – The internal standards (retention time and response) are evaluated for method compliance. The internal standards are used in quantitation of the target parameters and monitor the instrument sensitivity and response for stability during each analysis.

Volatile Organic Compounds (VOC) Analyses

The QA/QC parameters for VOC analyses for all of the samples were within acceptable control limits, except as noted below:

Recoveries - Surrogate, MS/MSD and LCS

All Surrogate, Matrix Spike (MS), Matrix Spike Duplicate (MSD) and Laboratory Control Sample (LCS) recoveries were within acceptable quality control limits, except as noted in Table 2 below.

TABLE 2
Surrogate and MS/MSD Recoveries Out of QC Limits: VOC
Charleston Naval Complex, Zone E, AOC 569, Charleston, SC

SDG	Sample	Parameter	Recovery	Recovery Limits	Associated Samples	Flag
75886	569SB00801	Bromofluorobenzene (surrogate)	125*	59-113	569SB00801	Detects only - J
75886	569SB00903	Bromofluorobenzene (surrogate)	160*	59-113	569SB00903	Detects only - J
75887	569EB008N1	Toluene-d8 (surrogate)	87*	88-110	569EB008N1	No flags applied (EB)

* - out of control limits

Rejected Data

No data were rejected based upon the validation process for this sampling event.

Conclusion

A review of the analytical data submitted regarding the investigation of Zone E, AOC 569, at the Charleston Naval Complex, Charleston, South Carolina by CH2M HILL has been completed. An overall evaluation of the data indicates that the sample handling, shipment, and analytical procedures have been adequately completed, and that the analytical results should be considered usable as qualified.

The analytical data had minor QC concerns as indicated above, however, it did not affect data usability for those specific results. The validation review demonstrated that the analytical systems were generally in control and the data results can be used in the decision making process.

Attachment 1 - Changed Qualifiers and Results
Zone E, AOC 569 - Data Validation

Parameter Class	Analytical Method	Parameter	SDG	Sample ID	Lab Sample ID	Matrix	Lab Result	Lab Qual	Final Result	Final Qual	Units	Reasons
VOA	SW8260B	BENZENE	75886	569SB00903	75886007	SO	8.1	=	8.1	J	ug/kg	SS
VOA	SW8260B	ETHYLBENZENE	75886	569SB00903	75886007	SO	3.6	J	3.6	J	ug/kg	SS
VOA	SW8260B	TOLUENE	75886	569SB00903	75886007	SO	1.2	J	1.2	J	ug/kg	SS
VOA	SW8260B	XYLENES, TOTAL	75886	569SB00903	75886007	SO	2.4	J	2.4	J	ug/kg	SS

	StationID	E569SB008		E569SB008		E569SB008		E569SB008	
	SampleID	569CB00802 (3-5ft)		569SB00801 (0-1ft)		569SB00802 (3-5ft)		569SB00803 (-ft)	
	DateCollected	03/04/2003		03/04/2003		03/04/2003		03/04/2003	
	DateExtracted	03/05/2003		03/05/2003		03/05/2003		03/05/2003	
	DateAnalyzed	03/07/2003		03/06/2003		03/06/2003		03/07/2003	
	SDGNumber	75886		75886		75886		75886	
Parameter	**Units**								
Benzene	ug/kg	1.3	J	5.6	U	5.7	U	1950	J
Toluene	ug/kg	0.76	J	5.6	U	5.7	U	773	J
Ethylbenzene	ug/kg	1.7	J	5.6	U	5.7	U	51900	=
Xylenes, Total	ug/kg	2.5	J	5.6	U	5.7	U	19000	=

	StationID	E569SB009		E569SB009		E569SB009		E569SB010	
	SampleID	569SB00901 (0-1ft)		569SB00902 (3-5ft)		569SB00903 (-ft)		569SB01001 (0-1ft)	
	DateCollected	03/04/2003		03/04/2003		03/04/2003		03/04/2003	
	DateExtracted	03/05/2003		03/05/2003		03/05/2003		03/05/2003	
	DateAnalyzed	03/06/2003		03/06/2003		03/07/2003		03/06/2003	
	SDGNumber	75886		75886		75886		75886	
Paramet r	**Units**								
Benzene	ug/kg	9.6	=	1.1	J	8.1	J	437	J
Toluene	ug/kg	0.48	J	5.8	U	1.2	J	68.9	J
Ethylbenzene	ug/kg	6.6	=	5.8	U	3.6	J	9330	=
Xylenes, Total	ug/kg	2.5	J	5.8	U	2.4	J	1980	=

	StationID	E569SB010		E569SB010		E569SB011		E569SB011	
	SampleID	569SB01002 (3-5ft)		569SB01003 (-ft)		569SB01101 (0-1ft)		569SB01102 (3-5ft)	
	DateCollected	03/04/2003		03/04/2003		03/04/2003		03/04/2003	
	DateExtracted	03/05/2003		03/05/2003		03/06/2003		03/06/2003	
	DateAnalyzed	03/07/2003		03/06/2003		03/06/2003		03/06/2003	
	SDGNumber	75886		75886		75886		75886	
Paramet r	**Units**								
Benzene	ug/kg	1.4	J	805	J	5.9	U	5.8	U
Toluene	ug/kg	5.5	U	1470	J	5.9	U	5.8	U
Ethylbenzene	ug/kg	55.7	=	55000	=	5.9	U	0.47	J
Xylenes, Total	ug/kg	16.1	=	151000	=	5.9	U	5.8	U

	Stati nID	E569SB011	
	SampleID	569SB01103 (-ft)	
	DateCollected	03/04/2003	
	DateExtracted	03/05/2003	
	DateAnalyzed	03/06/2003	
	SDGNumber	75886	
Parameter	**Units**		
Benzene	ug/kg	6.5	U
Toluene	ug/kg	6.5	U
Ethylbenzene	ug/kg	6.5	U
Xylenes, Total	ug/kg	6.5	U