UMTRA-DOE/AL -050504

RAP Modification No. 4 Cooperative Agreement No. DE-FC04-83AL16258

United States Department of Energy



Attachment 1

Remedial Action Plan and Site Conceptual Design for Stabilization of the Inactive Uranium Mill Tailings Site at Shiprock, New Mexico

REVISED FINAL

October 1989



JACOBS ENGINEERING GROUP, INC., ALBUQUERQUE OPERATIONS

TO: BDeutsch/MNelson

FROM: Brinkman/PL ongmire/DMiller

DATE: December 16, 1986

SUBJECT: Meeting with Navajo Tribe and NRC on Shiprock Ground-Water

A meeting took place at the Shiprock site between the TAC/DOE, Navajo Nation and NRC to discuss current issues concerning ground-water contamination in the floodplain area adjacent to the Shiprock tailings site. At the onset of the meeting it was agreed that the latest ground-water and surfacewater data need to be more fully evaluated to determine the relationships of contamination between the various sampling locations. Water table maps and iso-concentration maps need to be developed from these data.

The need for protective fencing for the floodplain was also addressed by both the Navajo Tribe and Mike Young of the NRC. They believe the floodplain must be protected from animal and human intrusion. This can be accomplished by installing a fence at the north and south ends of the floodplain from the escarpment to the San Juan River and along the escarpment wherever access could be obtained to the floodplain. The San Juan River would act as a natural barrier to access on the east side of the floodplain. It would not be appropriate to install a fence along the bank of the San Juan River as yearly flooding conditions would result in frequent maintenance and repair costs.

Both the NRC and the Navajo Nation believe that the ground water at the north boundary of the floodplain (the area northeast of the channel which cuts the floodplain) needs to be characterized for ground-water contamination and water levels. Further, upgradient water samples need to be collected between well locations 608/609 at the southern boundary of the floodplain, to more accurately determine background water-quality conditions. It appears that shallow ground water on the east side of the San Juan River is not contaminated due to the site, but high levels of TDS (6000 mg/l) and sulfate (3500 mg/l) are probably due to irrigation return flow. However, it was requested that additional shallow ground-water samples be collected across the San Juan River, adjacent to the floodplain. It was also requested that water samples be collected on adjacent sides of the San Juan River at the upgradient, cross-gradient and downgradient surface water locations.

It was agreed by all parties that the least costly and time consuming approach to install monitor wells and obtain water-sample/water-level data would be to use a backhoe to excavate into the gravel/alluvium and install well points. The Navajo representatives requested that this work be completed in one month. Approximately ten well points would need to be installed. The TAC/DOE representatives agree that the additional water quality and water-level data would better define the extent and movement of ground-water contamination. This information will greatly enhance

estimates of the natural movement of ground water to the San Juan River and the viability and cost/benefit of potential contaminant clean-up control scenarios.

A flowing artesian well is located on the fairground, north of the stabilized pile. This well has an output of approximately 40-300 gpm, depending on valve settings. The well has flowed for a number of years (\$\cong2\$ 1960 to the present). The well is completed in the Dakota/Morrison-Formation, which generally produces brackish water in the area. Masud Zaman, Director of the Navajo Water Resources, said he would investigate if there are water-quality data available for this well. Discharge of this well flows into the Bob Lee Wash, adjacent to the site, and is a source of recharge and ground-water mounding for the floodplain alluvial aquifer.

Two monitor wells are located at the top of the escarpment adjacent to the stabilized tailings pile. One of these wells does not have a protective metal casing nor is it capable of being locked. A one-inch diameter hole is in the top of the pvc cap, leaving the well open to environmental conditions. Mike Young also suggested that the NRC would recommend that monitor wells be installed to the north of the stabilized pile. This seems excessive because ground water within the Mancos Shale Formation on the escarpment is not currently being used and its potential use is none to minimal. Recharge of ground water to the floodplain of the San Juan River should be determined, and various scenarios for passive restoration and active aquifer restoration developed. The cost/benefit of these scenarios should be calculated. The additional data requested by the Navajo Tribe and NRC representatives will greatly enhance the validity and accuracy of the hydrological characterization of the site. Therefore, we recommend that the installation of approximately ten well points and additional water sampling be pursued as soon as possible.

DM/11

cc: DDubois through LStepp

DLechel DLeske DECEMBER 11,1986

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MODIFICATION 4

TO THE

REMEDIAL ACTION PLAN

AND

SITE CONCEPTUAL DESIGN

FOR STABILIZATION OF THE INACTIVE URANIUM HILL TAILINGS

SITE AT SHIPROCK, NEW MEXICO

October 1989

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1.0 DESCRIPTION OF THE MODIFICATION

This document, Modification 4, consists of changes to the Shiprock Remedial Action Plan (RAP) that more completely describe the San Juan River floodplain groundwater conditions adjacent to the disposal cell and recommends interim restrictions to last until groundwater restoration decisions are finalized on the use of floodplain lands that contain contaminated groundwater. The updated groundwater data were obtained through investigations conducted subsequent to the publication of the final RAP.

In addition to revisions in the text of the RAP, a report containing the floodplain groundwater data and interpretation is included as Appendix E to the Processing Site Characterization Report (Exhibit 6) and supersedes the previous versions of Appendix E to the Processing Site Characterization Report.

Responses to letters from the U.S. Nuclear Regulatory Commission (NRC), the Navajo Nation, and the Bureau of Indian Affairs have been prepared and are included to address concerns related to the San Juan River floodplain.

2.0 NEED FOR THE MODIFICATION

This modification to the RAP is needed to address concerns that were expressed by the NRC, Navajo Nation, and Bureau of Indian Affairs in letters to the U.S. Department of Energy (DOE). Copies of the letters are included as Exhibits 1 and 2. The letters inquired about the extent of groundwater contamination in the floodplain, the risk posed to the public by the contaminated groundwater, and the DOE's plan for cleaning up the floodplain. Responses to the NRC, Navajo Nation, and Bureau of Indian Affairs comments are included as Exhibits 3 and 4. In letters from the DOE to the NRC, Navajo Nation, and Bureau of Indian Affairs (Exhibit 5), the DOE agreed to respond to the floodplain groundwater issues in a separate RAP modification.

3.0 RAP TEXT REVISIONS

Page 15, Section 3.6

Replace the last sentence of the second paragraph on page 16 with the following: "These seeps and a pond in the floodplain that may have been used to hold liquid mill effluent are the apparent sources of contaminated groundwater conditions in the alluvium. A complete description of groundwater conditions in the floodplain alluvium is contained in Appendix E to the Processing Site Characterization Report, dated August 1989."

Page 21, Section 4.4

Delete the first complete paragraph and the third paragraph on page 21. Replace the last paragraph on page 21 with the following:

background groundwater quality in the floodplain alluvium adjacent to the site is very similar to the quality of the San Juan River. The floodplain alluvium is physically separated from the Mancos Shale by an escarpment which is the discharge/evaporation boundary of the shallow system. During active milling there was discharge of contaminated water across the floodplain alluvium. This discharge was apparently the source of elevated concentrations of TDS, chloride, nitrate, sulfate, and uranium, which are found in groundwater in the floodplain alluvium. A complete description of groundwater conditions in the floodplain alluvium is contained in Appendix E of the Processing Site Characterization Report, dated February 1989. The sampling described in that document was done when the stage of the San Juan River represented average to below average flow conditions. The mean daily discharge for the two rounds of sampling ranged from 1460 to 2740 cfs. The two rounds of sampling were completed during the 1985 water year and the 1985 calendar year, for which the mean daily discharge had minimums of 920 cfs and 920 cfs; maximums of 12,700 cfs and 12,700 cfs; and means of 3,589 cfs and 3,688 cfs, respectively. Constituents, other than molybdenum and vanadium, on the opposite side of the river were at background concentrations.

There is no current use of the floodplain groundwater, and the likelihood of future use is low because of the poor water quality and the availability of water from a municipal supply system. Considering the low likelihood of future use and the provisions for a surveillance and maintenance plan, further measures for water resources protection are not necessary at this time.

Page 23, Section 5.2

Add the following sentences at the end of the second paragraph in Section 5.2: "As the floodplain adjacent to the site will be included as part of the final disposal site, access will be restricted. Upon

promulgation of final EPA groundwater standards, the DOE will determine the potential for adverse effects on human health and the environment resulting from the contaminated groundwater in the floodplain."

Page E-6, Section E.2.2.2

Replace the sixth paragraph of Section E.2.2.2 with the following: "Discharge of tailings raffinate and mill drainage to the Bob Lee Wash and the floodplain alluvium adjacent to the Shiprock site during active processing resulted in soil and groundwater contamination. This contamination is also the result of tailings seepage through the Mancos Shale, as evidenced by seepage faces occurring along the escarpment.

EXHIBIT 1



UNITED STATES NUCLEAR REGULATORY COMMISSION WASHINGTON, D. C. 20555

AUG

John G. Themelis, Project Manager UMTRA Project Office U.S. Department of Energy Post Office Box 5400 Albuquerque, New Mexico 87115

Dear Mr. Themelis:

We have reviewed Modification No. 3 to the Shiprock, New Mexico, Remedial Action Plan, transmitted to us by your letter dated May 29, 1986. The modification deals with the three remaining conditional concurrence issues, i.e. groundwater in the floodplain alluvium, radon barrier thickness, and seismic stability.

Based on the staff's review of the textual changes to the RAP and the detailed calculations and design pertinent to Change No. 14-Radon Barrier Thickness, we conclude that this change is acceptable and closes the Shiprock radon barrier conditional concurrence issue. Likewise, based on our review, we find that the proposed RAP changes presented in Change No. 15 - Seismic Stability of Embankment are acceptable and close the seismotectonic characterization conditional concurrence issue.

However, the staff's review of Change No. 13 has resulted in a conclusion that the proposed modification is inadequate to resolve NRC's concurrence contingency about the contaminated groundwater in floodplain alluvial sediments northeast of the Shiprock site. Enclosed are major and detailed comments on both the proposed action and Appendix E to the Shiprock Processing Site Characterization Report, and questions pertinent to the legal aspects of DDE's proposal.

Should you have any questions regarding this matter, please contact Dan Gillen of my staff at FTS 427-4160.

Malcolm R. Knapp, Chief

Low-Level Waste and Uranium Recovery Projects Branch Division of Waste Management

Office of Nuclear Material Safety

and Safeguards

Enclosure: As stated

REVIEW OF SHIPROCK RAP MODIFICATION NO. 3, CHANGE NO.13 AND APPENDIX E TO THE SHIPROCK PSCR

We endorse consideration of institutional controls, such as land use restrictions, to prevent human or environmental exposure to groundwater contaminated by uranium milling activities at UMTRAP sites. Implementation of institutional controls at the Shiprock site appears favorable because access to the contaminated area is limited by a natural cliff, the San Juan River, and one dirt road through the restricted Shiprock site; the floodplain sediments have been deposited in the current geomorphic setting and will probably be eroded in the next tens to hundreds of years; and a public water system is available locally for distribution of drinking water.

The proposed modification, however, does not adequately address how the proposed institutional controls will be effective in preventing human and environmental exposure. Under Section 4 of NRC's Standard Review Plan for RAP's, NRC must verify that proposed institutional controls will prevent exposure of human and environmental populations to contaminants. Problems with the current proposal include (1) lack of specific actions in the proposed RAP modification, (2) lack of consideration of the duration of the necessary control, (3) insufficient demonstration that the institutional controls fully encompass all contaminated groundwater that may pose potential hazards to humans and the environment, and (4) insufficient consideration of the legality of the proposed approach for preventing exposure to contaminated groundwater.

Major Comments

1. The language of the modification does not specify any particular course of action to restrict access to contaminated groundwater beneath the floodplain. This precludes an NRC finding that the proposed institutional controls will be effective in preventing exposure to the contaminants. The RAP modification should be amended to specify the measures that will be implemented to prevent human or environmental exposure to the contaminated groundwater. These measures could include documentation such as a deed notice about the groundwater contamination, deed notice prohibiting use of the groundwater, specific monitoring and enforcement provisions for the restriction, and letters of agreement from the Navajo Nation, the State of New Mexico, and other interested parties.

- Section 4 of NRC's SRP requires NRC staff to verify that proposed institutional controls are accompanied by provisions for monitoring programs sufficient to determine the termination of water contamination hazards. Unlike the perpetual custody needed for the stabilized uranium tailings, NRC expects that institutional controls for groundwater contamination may be terminated in the future because the contamination should dissipate with time. Institutional controls for contaminated groundwater may be terminated after contaminant concentrations no longer pose a significant hazard to humans or the environment. The proposed modification, however, does not estimate the duration of the groundwater contamination hazard nor make provisions for monitoring programs sufficient to assess the duration of the hazard. The proposed modification should be revised to assess realistic ranges in the duration of the contamination hazard and to provide for monitoring programs to determine when the hazard has dissipated. The details of the monitoring programs, however, should be included in the Maintenance and Surveillance Plan for the Shiprock site.
- Section 4 of NRC's SRP requires NRC reviewers to verify that proposed institutional controls encompass water contamination that may cause significant adverse impacts. The last line of the first paragraph proposed to be added to the end of paragraph 6 in Section 4.4 can be interpreted to imply that shallow groundwater on the north side of the San Juan River has been contaminated by molybdenum and vanadium. NRC staff considers it unlikely that shallow contaminated groundwater flows under the San Juan River from the floodplain sediments on the south side of the river. Nevertheless, it is logical to suspect uranium milling at Shiprock as a potential source of this contamination since vanadium and molybdenum are often associated with groundwater contamination from uranium tailings. The RAP should be modified to assess whether uranium milling has contaminated shallow groundwater on the north side of the San Juan River across from the Shiprock site, and if so, to what extent. In addition, because of flooding when the monitoring wells were installed, the extent of contamination in the floodplain sediments between the river and wells 601, 624 and 627 has not been characterized. The RAP should be modified to provide information related to these areas that adequately demonstrates that proposed institutional controls encompass the extent of contamination.

Questions on Legal Aspects

 Does DOE have authority under UMTRCA to purchase property and water rights to prevent potential human and environmental exposure to contaminated groundwater?

- 2. If DOE does not have this authority, does the Navajo Nation or the State of New Mexico have authority to purchase and control property to prevent human and environmental exposure to groundwater contaminants?
- 3. What groundwater doctrine governs the allocation of tributary and non-tributary groundwater in the vicinity of the Shiprock site?
- 4. Is DOE's purchase and inclusion of the floodplain in the designated site consistent with the groundwater allocation doctrine for the Shiprock area?
- 5. Could a person use contaminated groundwater from beneath the Shiprock site if DOE owned and controlled the floodplain property?
- 6. What legal instruments would be required to establish institutional controls at the Shiprock site to prevent exposure of humans or the environment to contaminated groundwater?
- 7. What enforcement authorities exist to enforce a groundwater use prohibition at the Shiprock site? How effectively are these authorities likely to be enforced?

Detailed Comments

RAP Modification No. 3, Change No. 13

1. Potential Impacts on Surface Water Quality

The RAP, as proposed to be modified, does not evaluate the potential impacts of contaminated groundwater discharge on water quality in the San Juan River. This evaluation should be included in the RAP modification and should consider river flow rate data presented in the proposed change to Section 4.4.

2. Probability of Future Use

The second paragraph of the text to be added to the end of Section 4.4 states that the likelihood of future use of groundwater within the floodplain sediments is low because of the availability of a municipal water supply and because of the groundwater's "naturally poor quality." The natural quality of the groundwater, however, has not been reliably established. Appendix E to the Shiprock PSCR states that it is difficult to determine the background quality of groundwater within the floodplain sediments. Wells installed in the sediments hydraulically upgradient of the core of the groundwater contamination also indicated contamination. As a result, DOE has had to assume that the

background quality of groundwater within the floodplain is approximately the quality of water in the San Juan River. Consequently, background groundwater quality in the floodplain sediments has been very poorly established, if established at all. In addition, comparison of these assumed ranges of background concentrations indicate that the background quality of groundwater in the floodplain is better than the quality of other nearby sources of groundwater. Therefore, the RAP should delete "naturally poor quality" as a reason why potential use of groundwater within the floodplain sediments is expected to be low.

3. Necessity for Protective Measures

The last sentence proposed to be added to Section 4.4 states that further measures for water resources protection are not necessary and cites the absence of "toxic constituents" as a partial justification. This statement is inaccurate since the proposed inclusion of the floodplain in the designated site to prevent future exposure of humans and the environment to the contaminated groundwater is considered a protection measure. In addition, the statement about the absence of toxic constituents is not consistent with groundwater quality data from the floodplain sediments north of the site. These data indicate elevated concentrations of nitrate (up to 100 times the New Mexico State drinking water standard), fluoride (up to 7 times New Mexico standards), and uranium (not exceeding New Mexico's standard but up to more than 100 times EPA's advisory level for drinking water). The RAP should be modified to remove the statement that protective measures for water resources are not necessary and that contaminated groundwater does not contain toxic constituents.

4. Present Contamination

The proposed modification to Paragraph 6 of Section E.2.2.2 indicates that the source of contamination of groundwater in the floodplain sediments is existing seepage along the escarpment north of the site. The RAP should be revised to state whether contamination is presently occurring or whether it was primarily caused by past discharges. In addition, modifications to Sections E.2.2.2 and 3.6 should be consistent with one another with respect to the source(s) of groundwater contamination.

Comments on Appendix E, Shiprock PSCR

1. Groundwater Flow

Figure E.8 illustrates that groundwater flow in the floodplain sediments generally parallels flow directions in the San Juan River, but does not provide water level contours near the mouth of Bob Lee Wash (i.e., the ephemeral channel from N9000, E9500 to N10000, E9500). Close to the mouth, however, the water levels are higher than those in adjacent floodplain sediments closer to the river. This observation suggests that shallow groundwater flows through the sediments in Bob Lee Wash and recharges the alluvial sediments in the floodplain. This recharge may affect the duration and extent of groundwater contamination of the floodplain sediments, since the recharge originates from the highly contaminated terrace alluvium beneath the tailings piles and mill site. The appendix should be revised to assess whether the wash is recharging the groundwater system in the floodplain sediments and to evaluate the significance of such recharge to long-term contamination of floodplain sediments.

2. River Stage

Because of the proximity of the shallow groundwater system in the floodplain sediments to the San Juan River, groundwater flow in this system is expected to be highly transient in response to changes in river stages. The appendix does not provide river stages measured at the time when water levels were measured in the floodplain sediments in October and December of 1985. The appendix should be revised to provide such measurements if available, and future sampling should include concurrent river stage measurements.

3. Artesian Conditions

Based on the groundwater levels provided in Table E.2, it appears that wells 629, 630, and 633 are weakly artesian. The appendix, however, does not discuss the validity or significance of the artesian water levels in the context of vertical flow within the alluvial sediments. The artesian levels may indicate vertical upward flow from the Mancos Shale into the floodplain alluvium, indicating that this area is a regional or local discharge zone. The appendix should be revised to include an assessment of the significance of artesian water levels measured in these wells.

4. Water Level Measurements and Sampling

Table E.2 indicates that well(point) 601 was dry when water levels were measured on December 19, 1985. Table E.3 lists the analytical results from a sample collected in well 601 in October of 1984, thus indicating the presence of enough water in the well to collect a sample. If there was enough water in the well to sample, there should have been enough to measure a water level. However, the appendix does not provide a water level for well 601. The appendix should be revised to clarify why well 601 was sampled without measuring a water level.

5. Missing Constituents

Appendix E presents analytical results for water quality samples collected from groundwater within floodplain sediments along the San Juan River. Samples from the monitoring wells (wells 608-632), however, were not analyzed for concentrations of aluminum, antimony, arsenic, barium, chromium, cobalt, lead, mercury, nickel, organic carbon, lead-210, phosphate, polonium-210, radium-226, silica, silver, strontium, and thorium-230. The appendix should be revised to explain why these constituents were not analyzed for at least initial characterization of groundwater quality.

EXHIBIT 2

THE NAVAJO NATION

WINDOW ROCK NAVAJO NATION IARIZONA: 86515

PETERNON ZAH ENAIRMAN NA LES TRIBAL COUNCIL



EDWARD T. BEGAY

John G. Themelis
Project Manager
Uranium mill Tailings Office
U. S. Department of Energy
Altuquerque, New Mexico

Dear Mr. Themelis:

Enclosed for your review are additional comments to the "Shiprock FAP Modification No. 3". Specifically, Change No. 13, Groundwater in Floodplain Alluvium.

Should you require additional information or have any questions, please do not hesitate to give me a call at 602/871-6594. We regret this delay. Your understanding and assistance is greatly appreciated.

Tommy K. Begay, Jr.

Program Manager UMTRA Project Navajo Site Program Division of Resources

THE NAVAJO NATION

THE NAVAJO NATION

WINDOW ROCK, NAVAJO NATION IARIZONAL BOSIS

PETERSON ZAH CHAIRMAN NAVA D TRIBAL COUNCIL



EDWARD T. BEGAY

VICE CHAIRMAN NAVAJO TRIBAL COUNCIL

August 21, 1986

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Tommy R. Begay, Jr., Program Manager

Navajo UMTRA Project, Division of Resources

FROM:

Masud Zaman, Director

Water Management Department

SUBJECT: MODIFICATION NO. 13 TO SHIPROCK TAILINGS REMEDIAL ACTION PLAN (RAP) 1.E. DISCOVERY OF CONTAMINATED GROUNDWATER IN THE ALLUVIUM OF SAN

JUAN RIVER FLOOD PLAIN.

Reference is made to your memorandum of June 10, 1986 along with the aforeventioned subject document. As requested the Water Management Department staff has completed the review of the subject package and are pleased to submit the following comments for DOE'S consideration:

The document failed to establish an exact boundary of the contamination in the area e.g. well points 608 and 609 show very high contamination in the south eastern part. It seems that no effort was made to determine the water quality in the alluvium beyond these points.

Similarly, no efforts have been made to investigate the sandbar sandwiched between the river channel and the conteminated area already investigated (Figure E-8). Our analysis of groundwater elevations given in the figure E-8 indicates that the contaminated groundwater in the middle part is not totally stagnant but move's northward towards the sandbar and is not in anyway parallel to river flow.

We suggest that the sandbar area should be investigated to define the total extent of the contaminated area.

- 2. The document failed to provide the estimate of the volume of the contaminated water in the area and the amount of contaminated water being discharged to the surface flow of the river.
 - The document also failed to provide the true background water quality of the alluvial water in the area. The two well points, 631 and 632, located in the alluvium north of the river channel do not provide the true background quality of the alluvial water. That the water quality at these locations is very poor may be due to the explanation provided in this document or because of other reasons. But, an Indian Health Service (IHS)

1980-81 hydrologic investigation of the north bank alluvium plain of the river indicated that the alluvial water in the area is of good quality about a mile east southeast of well points 631 and 632 with total dissolved solids (TDS) ranging between 500 to 800 mg/l. Whatever the reason may be, it is a small area located either eide north of the 666 bridge where the quality of the alluvial water is poor.

In the light of above, in order to establish a true backgre and water quality in the alluvium, additional areas should be investigated e.g. area east southeast of the bridge on the north bank, Helium Plant Infiltration Gallery area southwest and the area southeast of well points 608 and 609 along the south bank of the San Juan River.

4. A statement on page 4, paragraph 3, that the surface water in the adjacent San Juan River is apparently not affected by contamination in the alluvium, i.e there is no detectable degradation of the river.

Please provide the analysis of water at the point of discharge of the contaminated water into the river and the surface water quality upstream and down stream of the point of discharge.

- 5. On page 4, paragraph 4, line 3 states that "however, chemical pollution from these sources at times of very low river flow would be significant."
 - a. What is that significant amount of contaminated groundwater to be introduced to surface water during the low river flow?
 - b. Bow will the NTUA water supply be impacted during the low flows at the point of withdrawal located at a short distance down gradient of contaminated area?
 - c. What is the DOE'S estimated low river flow?
- 6. A statement on page 4, paragraph 2 quotes the apparent contamination of groundwater across the San Juan River has limited importance for several reasons. Foremost is the fact that there is no use of this water, and utilization of the water is unlikely because of the availability of a better quality municipal supply. Another reason is that the other sources of contamination to the groundwater, both natural (leaching of salts from Mancos Shale) and man made (concentration of salts in irrigation return flow), tend to overshadow the effects of apparent contamination from the mill. Finally, there are no drinking water standards for either molybdenum or vanadium. This may be attributed to the fact that data on toxic effects in humans for the two elements are lacking.

Our analysis of the statement is as follows:

a. Under the existing conditions the first reasoning seems quite logical i.e alternate and better quality surface water is readily available against the poor quality groundwater for all practical uses. But, conditions may change in the future. The contaminated alluvial water in the questionable area, as proposed, could be restricted for human/livestock uses through institutional control or other means but, what about the

discharge of contaminated water through seepage into the main body of the river during the low flows and degrading the Public water supply as discussed in item 5 above? Bow will this problem be controlled?

b. Under the second reasoning that natural leaching from Mancos Shale and man made concentration of salts in irrigation return flow overshadow the effects of apparent contamination from mill. We disagree with the first part of this reasoning. As discussed in item 3 above that, except the small area near the bridge, alluvial water in rest of the area is of acceptable quality for all practical uses (IES 1981). Moverover, two existing Wells 12K-300D and 12K-300E both located approximately 2 miles borth northwest of Shiprock (Location. Quad 17 11'65 X 13'40 miles and Quad 17-11'35 X 13'95 miles respectively) 14 and 20 feet deep respectively tap the alluvium of San Juan Floodplain. The water quality in both wells is good with TDS 762 and 493 mg/1 respectively (data can be provided on request). If leaching from Mancos shale was the reason then all alluvial water in the area could have been contaminated but, that is not the case.

As far as the contamination from irrigation flow return is concerned, it may be true for certain areas but is not true for all alluvial water in the area.

NOTE: The Bureau of Reclamation (BOR) in cooperation with Navajo Division of Water Resources is in the process of starting a salinity study to determine the impact of irrigation return flow in the San Juan River between Hogback and Shiprock. This study will also reveal the contribution of salt to the shallow alluvial water from return flow.

Under the third reasoning, it is true that presently the standards for Vanadium and Molybdenum are lacking but, per awended Safe Drinking Water Act of May, 1986, the standard for these elements will be forthcoming within next three years.

However, there are at least preliminary indications that health effects for molybdenum and vanadium do occur at some yet undefined level.

Suggestions and Recommendations

- Redefine the area contaminated by the milling operation including the sandbar area and the area southeast of well points 608 and 609.
- 2. Determine a true background chemical quality of the alluvial water in the area.
- 3. Determine the impacts of contaminated groundwater through seepage on the NTUA water supply in the San Juan River during the low flows.

4. If the institutional control of the contaminated area is the alternative DOE is planning to adopt then in that case a proper monitoring and surveillance program should be adopted so that long term changes could be noted and its impacts on the NTUA water supply in particular and on surface flow in general could be evaluated.

5. Finally, this would seem to be an appropriate time to point out that in 40 CFR 192.2 Standards for the Control of Residual Radioactive Materials call for control for a minimum of 200 years and up to 1,000 years. Because control is to be inherent in the design plan, monitoring after disposal is not required to demonstrate compliance.

Since migration from the site has been detected during the final construction stages of the remedial action, it seems apparent that the plan may have some potentially fatal flavs. This should be the basis enough to call for a re-evaluation of the RAP to make sure that those designs flavs are identified and remediated if necessary.

Thank you for giving us a chance to review the subject document and regret the delay in submitting our comments. If you have any questions, please do not hesitate to call Carol Boughton or myself at 602/729-5281 or 729-5282.

Sincerely yours,

NAVAJO NATION

Masud Zaman, Director Water Management Department Division of Water Resources

MZ/gs

cc: Peter Deswood, Jr., Executive Director Division of Water Resources

> Mike Nelson, Staff Assistant. Chairman's Office

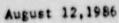
John MacKinnon, Attorney Navajo Department of Justice

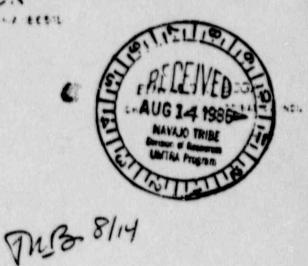
Stanley Pollack, Attorney Navajo Department of Justice THE MY WARD NATION

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TIDE PYZAM







MEMORANDUM

TO : Tommy K. Begsy, Jr., Program Manager

UMTRA Project Navajo Site Program

FROM : Navajo Fish and Wildlife Program

Division of Resources

SUBJECT : Comments of Modification No. 3 to the Shiprock Revised Final Remedial

Action Plan, Change No. 13- Groundwater in Floodplain Alluvium

Due to recently discovered ground water contamination in floodplain alluvium adjacent to the Shiprock uranium mill tailings site, we support the proposed elimination of waterfowl ponds in the floodplain alluvium. Open waters would pose a potential threat to human health and completely blocking human access to the ponds would be impossible. In addition, though contamination levels in the ponds may not be toxic enough to be lethal to wildlife species such as waterfowl or to humans ingesting the birds, we do not advocate allowing any uranium mill tailings contamination in open waters or ground waters, whether lethal to wildlife or not.

The recent discovery of ground water floodplain alluvium contamination points up the fact that adequate initial testing may not have been done. These contamination conditions should have been discovered in the initial analysis of the site. The two wells, No. 631 and 632, which show uranium contamination, also show the extent to which ground water contamination can spread.

What are the alternative wildlife mitigation plans proposed to compensate for the loss of the waterfowl ponds? Are there any long range plans for possible future reinstatement of the ponds? Are there any plans to close off the contaminated seeps and pond in the floodplain alluvium to wildlife access?

An addition to the map on page 6 of the document "Appendix E to the Processing Site Characterization Report for the Uranium Mill Tailings Site at Shiprock, New Mexico, March, 1986" shows the control fence running from the escarpment to the San Juan River, blocking access to the waterfowl pond areas. The map also shows what appears to be a retention pond outside the new designated site inclusion. This pend should also be included in the designated site if it currently is not.

Sincerely,

Samuel F. Diswood, Program Manager

Navajo Fish and Wildlife



United States Department of the Interior

Navajo Area Office Post Office Box M Window Rock, Arizona 86515

Environmental Quality

JUL - 1 1985

Mr. John G. Themelis
Project Manager
UNTRA Project Office
Albuquerque Operations Office
P.O. Box 5400
Albuquerque, New Mexico 87115

Dear Mr. Themelis:

The Revised Tinal, RAP Modification No. 3, Attachment 1, for the Stabilizatio. of the Inactive Uranium Mill Tailings Site at Shiprock, New Mexico has been reviewed by this office.

We respectfully submit the following comments for your consideration:

-Page 1, Section B., Paragraph 1

The last sentence of this paragraph states that "Constituents, other than molybdenum and vanadium on the other side of the river were at background concentrations." What were the levels of concentration, if any, of these elements (molybdenum/vanadium) on this (south?) side of the river? Should the levels measured to be of concern?

-Page 1, Section B., Paragraph 2

The second sentence of this paragraph states refers to an absence of toxic constituents, this does not appear to be consistent with the first paragraph of Section B.

Although the elevated concentrations of TDS, chloride, nitrate, sulfate, and uranium which were found were at levels less than those considered hazardous, they were present. May we suggest that these findings be acknowledged, and a statement that while they were existent that the levels at which they were present were not to be of concern.

Due to the highly technical nature of the remainder of the document, we have no additional comments and are dependent on your expertise in this area.

Thank you for the opportunity to review and comment on this document and with your response to our issues of concern, please consider this as our concurrence in the Revised Final, RAP Modification No. 3, Attachment 1, for the subject project.

Sincerely,

Milgred Brown

EXHIBIT 3

SECTION 1

Sita:

Shiprock, New Mexico

Date: August 8, 1986

Document:

Remedial Action Plan

Commentor:

Nuclear Regulatory Commission

Comment:

Detailed Comments, RAP, Change No. 13

1. Potential Impacts on Surface Water Quality

The RAP, as proposed to be modified, does not evaluate the potential impacts of contaminated groundwater discharge on water quality in the San Juan River. This evaluation should be included in the RAP modification and should consider river flow rate data presented in the proposed change to Section 4.4.

SECTION 2

Response:

Change No. 13

By: P. Longmire - TAC

Date:

June 14, 1988

1. Laboratory analyses of surface water collected along the San Juan River (north and south banks) adjacent to the Shiprock site show that contaminated alluvial groundwater has not adversely impacted the river. This groundwater is diluted by the San Juan River; concentrations of molybdenum, nitrate, sulfate, and uranium in the river are below proposed EPA maximum concentration limits (MCLs) for these constituents. Concentrations of these solutes are essentially the same along the north and south banks of the San Juan River. Surface water quality data are provided in Appendix E to the Shiprock Processing Site Characterization Report, dated August 1989.

SECTION 1

Site:

Shiprock, New Mexico

Date: August 8, 1986

Document:

Remedial Action Plan

Commentor:

Nuclear Regulatory Commission

Comment:

Major Comments

Section 4 of NRC's SRP requires NRC staff to verify that proposed institutional controls are accompanied by provisions for monitoring programs sufficient to determine the termination of water contamination hazards. Unlike the perpetual custody needed for the stabilized uranium tailings. NRC expects that institutional controls for groundwater contamination may be terminated in the future because the contamination should dissipate with time. Institutional controls for contaminated groundwater may be terminated after contaminant concentrations no longer pose a significant hazard to humans or the The proposed modification, however, does not estimate the environment duration of the groundwater contamination hazard nor make provisions for monitoring programs sufficient to assess the duration of the hazard. The proposed modification should be revised to assess realistic ranges in the duration of the contamination hazard and to provide for monitoring programs to determine when the hazard was dissipated. The details of the monitoring programs, however, should be included in the Maintenance and Surveillance Plan for the Shiprock site.

SECTION 2

Response:

Major Comments

By: P. Longmire - TAC

Date:

June 14, 1988

2. The DOE agrees with the NRC's comment No. 2 regarding institutional controls for groundwater contamination and that details of the monitoring programs should be included in the Maintenance and Surveillance Plan for the Shiprock site. If aquifer restoration is not performed on the floodplain alluvium, groundwater contamination may persist for several hundred years.

SECTION 1

Site: Shiprock, New Mexico

Date: August 8, 1986

Document:

Remedial Action Plan

Commentor:

Nuclear Regulatory Commission

Comment:

Major Comments

3. Section 4 of NRC's SRP requires NRC reviewers to verify that proposed institutional controls encompass water contamination that may cause significant adverse impacts. The last line of the first paragraph proposed to be added to the end of paragraph 6 in Section 4.4 can be interpreted to imply that shallow groundwater on the north side of the San Juan River has been contaminated by molybdenum and vanadium. NRC staff considers it unlikely that shallow contaminated groundwater flows under the San Juan River from the floodplain sediments on the south side of the river. Nevertheless, it is logical to suspect uranium milling at Shiprock as a potential source of this contamination since anadium and molybdenum are often associated with groundwater contamination from uranium tailings. The RAP should be modified to assess whether uranium milling has contaminated shallow groundwater on the north side of the San Juan River across from the Shiprock site, and if so, to what extent. In addition, because of flooding when the monitoring wells were installed, the extent of contamination in the floodplain sediments between the river and wells 601, 624, and 627 has not been characterized. The RAF should be modified to provide information related to these areas that adequately demonstrates that proposed institutional controls encompass the extent of contamination.

SECTION 2

Response:

Major Comments

By: P. Longmire - TAC

Date:

June 14, 1988

3. Five additional well points were installed north of the San Juan River during February 1987 and January 1988. Laboratory analyses of water collected from these well points show that the groundwater is not contaminated, and groundwater is not flowing under the San Juan River. A complete discussion on water quality conditions of the floodplain alluvium is provided in Appendix E to the Shiprock Processing Site Characterization Report, dated August 1989. Five additional well points were installed north of the canal and south of the San Juan River. Water quality data collected from these well points show that groundwater is contaminated in this portion of the floodplain alluvium.

SECTION 1

Site: Shiprock, New Mexico

Date: August 8, 1986

Documen's:

Remedial Action Plan

Commentor:

Nuclear Regulatory Commission

Comment:

Detailed Comments, RAP, Change No. 13

2. Probability of Future Use

The second paragraph of the text to be added to the end of Section 4.4 states that the likelihood of future use of groundwater within the floodplain sediments is low because of the availability of a municipal water supply and because of the groundwater's "naturally poor quality." The natural quality of the groundwater, however, has not been reliably established. Appendix E to the Shiprock PSCR states that it is difficult to determine the background quality of groundwater within the floodplain sediments. Wells installed in the sediments hydraulically upgradient of the core of the groundwater contamination also indicated contamination. As a result, DDE has had to assume that the background quality of groundwater within the floodplain is approximately the quality of water in the San Juan River. Consequently, background groundwater quality in the floodplain sediments has been very poorly established, if established at all. In addition, comparison of these assumed ranges of background concentrations indicate that the background quality of groundwater in the floodplain is better than the quality of other nearby sources of groundwater. Therefore, the RAP should delete "naturally poor quality" as a reason why potential use of groundwater within the floodplain sediments is expected to to low.

SECTION 2

Response:

Change No. 13

By: P. Longmire - TAC

Date:

June 14, 1988

The phrase "naturally poor quality" of the floodplain alluvium in Section 4.4, paragraph 2, first sentence of the RAP has been deleted.

SECTION 1

Site: S

Shiprock, New Mexico

Date: August 8, 1986

Document:

Remedial Action Plan

Commentor: N

Nuclear Regulatory Commission

Comment:

Detailed Comments, RAP, Change No. 13

3. Necessity for Protective Measures

The last sentence proposed to be added to Section 4.4 states that further measures for water resources protection are not necessary and cites the absence of "toxic constituents" as a partial justification. The statement is inaccurate since the proposed inclusion of the floodplain the designated site to prevent future exposure of humans and the environment to the contaminated groundwater is considered a protection measure. In addition, the statement about the absence of toxic constituents is not consistent with groundwater quality data from the floodplain sediments north of the site. These data indicate elevated concentrations of nitrate (up to 100 times the New Mexico State drinking water standard), fluoride (up to 7 times New Mexico standards), and uranium (not exceeding New Mexico's standard but up to more than 100 times EPA's advisory level for drinking water). The RAP should be modified to remove the statement that protective measures for water resources are not necessary and that contaminated groundwater does not contain toxic constituents.

SECTION 2

Response:

Change No. 13

By: R. Peel - TAC

Date:

August 28, 1989

3. The DOE is in general agreement with the comment and appropriate revisions have been made. See Section 3.0, RAP Text Revisions.

March State	Section Section		
-	-	-	-
90		F 1 64	
40 , 40		ON	_

Site:

Shiprock, New Mexico

Date: August 8, 1986

Document:

Remedial Action Plan

Commentor:

Nuclear Regulatory Commission

Comment:

Detailed Comments, RAP, Change No. 13

4. Present Contamination

The proposed modification to Paragraph 6 of Section E.2.2.2 indicates that the source of contamination of groundwater in the floodplain sediments is existing seepage along the escarpment north of the site. The RAP should be revised to state whether contamination is presently occurring or whether it was primarily caused by past discharges. In addition, modifications to Sections E.2.2.2 and 3.6 should be consistent with one another with respect to the source(s) of groundwater contamination.

SECTION 2

Response:

Change No. 13

By: P. Longmire - TAC

Date:

June 14, 1988

 Sections 3.6 and E.2.2.2 of the RAP have been revised as stated in Section 3.0, Rap Text Changes.

SECTION 1

Site:

Shiprock, New Mexico

Date: August 8, 1986

Document:

Remedial Action Plan

Commentor:

Nuclear Regulatory Commission

Comment:

Appendix E. Shiprock PSCR

1. Groundwater Flow

Figure E.8 illustrates that groundwater flow in the floodplain sediments generally parallels flow directions in the San Juan River, but does not provide water level contours near the mouth of the Bob Lee Wash (i.e., the ephemeral channel from N9000, E9500 to N10000, E9500). Close to the mouth, however, the water levels are higher than those in adjacent floodplain sediments closer to the river. This observation suggests that shallow groundwater flows through the sediments in Bob Lee Wash and recharges the alluvial sediments in the floodplain. This recharge may affect the duration and extent of groundwater contamination of the floodplain sediments, since the recharge originates from the highly contaminated terrace alluvium beneath the tailings piles and mill site. The appendix should be revised to assess whether the wash is recharging the groundwater system in the floodplain sediments and to evaluate the significance of such recharge to long-term contamination of floodplain sediments.

SECTION 2

Response:

Major Comments 1

By: P. Longmire - TAC

Date:

June 14, 1988

1. Bob Lee Wash recharges the central portion of the floodplain alluvium, based on water-level measurements made in October 1985. In addition, discharge from a continuously flowing well (monitor well 648) completed in the Dakota Formation and located above the floodplain on the escarpment near the rodeo grounds flows into Bob Lee Wash. Ponded water resulting from this flow recharges the alluvium. This ponded water may leach contaminants from the soil due to past tailings raffinate discharge and serve as a source term for groundwater contamination with the floodplain alluvium. This recharge may have a long-term effect on alluvial groundwater quality. The effect of soil contamination within the floodplain alluvium is addressed in Appendix E to the Shiprock Processing Site Characterization Report, dated August, 1989.

SECTION 1

Site:

Shiprock, New Mexico

Date: August 8, 1986

Document:

Remedial Action Plan

Commentor:

Nuclear Regulatory Commission

Comment:

Appendix E. Shiprock PSCR

2. River Stage

Because of the proximity of the shallow groundwater system in the floodplain sediments to the San Juan River, groundwater flow in this system is expected to be highly transient in response to changes in river stages. The appendix does not provide river stages measured at the time when water levels were measured in the floodplain sediments in October and December of 1985. The appendix should be revised to provide such measurements if available, and future sampling should include concurrent river stage measurements.

SECTION 2

Response:

Appendix E

By: P. Longmire - TAC

Date:

June 14, 1988

2. Surface water elevations for the San Juan River were recorded in January 1988; these data are provided in Appendix E to the Shiprock Processing Site Characterization Report, August 1989. During January 1988, alluvial groundwater north of the river discharged to the river, where the elevation of the water table is higher than the river elevation. Surface water elevations were not recorded in October and December 1985. River stage data will be obtained in the future from the USGS for dates corresponding to the dates of water level measurements and sampling in the floodplain.

SECTION 1

Site: Shiprock, New Mexico

Date: August 8, 1986

Document:

Remedial Action Plan

Commentor: Nuclear Regulatory Commission

Comment:

Appendix E. Shiprock PSCR

3. Artesian Conditions

Based on the groundwater levels provided in Table E.2, it appears that wells 629, 630, and 633 are weakly artesian. The appendix, however, does not discuss the validity of significance of the artesian water levels in the context of vertical flow within the alluvial sediments. The artesian levels may indicate vertical upward flow from the Mancos Shale into the floodplain alluvium, indicating that this area is a regional or local discharge zone. The appendix should be revised to include an assessment of the significance of artesian water levels measured in these wells.

SECTION 2

Response:

Appendix E

By: P. Longmire - TAC

Date:

June 14, 1988

3. Alluvial monitor wells 629, 630, and 633 are weakly artesian, based on water level measurements tabulated in Table E.2 of Appendix E to the RAP. Inspection of water level measurements for well clusters 607-620-621-622-622, 602-617-618, 610-611, and 613-614 (Table E.2) shows that vertical gradients probably exist in these locations as well. The floodplain alluvium is probably a regional or local discharge zone for the underlying Mancos Shale. In addition, these vertical gradients inhibit downward migration of contaminants through the Mancos Shale, which are found in the overlying floodplain alluvium. These vertical gradients may also inhibit underflow beneath the San Juan River within the alluvial aquifer. Appendix E of the P3CR (included here as Exhibit 6) includes an assessment of the significance of artesian water levels measured in these monitor wells.

-				
SECTION 1				
Site:	Shiprock, New Mexico		Date:	August 8, 1986
Document:	Remedial Action Plan			
Commentor:	Nuclear Regulatory Co	mmission		
Comment:	Appendix E. Shiprock	PSCR		
4. Water L	evel Measurements and	Sampling		
measure sample of enou the we However appendi	on December 19, 198 collected in well 601 agh water in the well 11 to sample, there so, the appendix does	in October of to collect a should have been not provide	lists the and f 1984, thus sample. If the enough to a water lev	when water levels were alytical results from a indicating the presence was enough water in measure a water level el for well 601. The lass sampled without
SECTION 2				
Response:	Appendix E	By: P.	Longmire - T	AC
Date:	June 14, 1988			

4. A water level measurement was not taken at well point 601 during October 1984 for a reason that is unknown.

SECTION 1

Site: Shiprock, New Mexico

Date: August 8, 1986

Document:

Remedial Action Plan

Commentor: Nuclear Regulatory Commission

Comment:

Appendix E. Shiprock PSCR

5. Missing Constituents

Appendix E presents analytical results for water quality samples collected from groundwater within floodplain sediments along the San Juan River. Samples from the monitoring wells (wells 608-632), however, were not analyzed for concentrations of aluminum, antimony, arsenic, barium, chromium, cobalt, lead, mercury, nickel, organic carbon, lead-210, phosphate, polonium-210, radium-226, silica, silver, strontium, and thorium-230. The appendix should be revised to explain why these constituents were not analyzed for at least initial characterization of groundwater quality.

SECTION 2

Response:

Appendix E

By: P. Longmire - TAC

Date:

June 14, 1988

Monitor wells 608 through 632 were not analyzed for concentrations of aluminum, antimony, arsenic, barium, chromium, cobalt, lead, mercury, nickel, organic carbon, lead-210, phosphate, polonium-210, radium-226, silica, silver, strontium, and thorium-230. Tailings leachate within the floodplain alluvium is characterized by elevated (above background levels) concentrations of chloride, fluoride, molybdenum, nitrate, sulfate, total dissolved solids, uranium, and vanadium. Although the above species, which were not analyzed, contribute to a complete chemical analysis, the reported water quality data are adequate for characterizing water quality conditions within the floodplain alluvium. Additional and complete chemical analyses, with geochemical discussions, are provided in Appendix E to the Shiprock Processing Site Characterization Report, dated August 1989.

EXHIBIT 4

SECTION 1		
Site:	Shiprock, New Mexico	Date: August 21, 1986
Document:	Remedial Action Plan, Cha	ange No. 13
Commentor:	Masud Zaman, The Navajo	Nation
Comment:	1	
the area southeaste	e.g. well points 608 and 6	exact boundary of the contamination in 609 show very high contamination in the at no effort was made to determine the these points.
between t (Figure E- figure E- is not t	he river channel and the -8). Our analysis of 8 indicates that the conta	e to investigate the sandbar sandwiched contaminated area already investigated groundwater elevations given in the aminated groundwater in the middle part northward toward the sandbar and is not the middle part of the sandbar and is not the sandbar and
We suggestotal exte	t that the sandbar area nt of the contaminated area	a should be investigated to define the
SECTION 2		Dur D. Lange in Tab
Response:	Manch 0 1000	By: P. Longmire, TAC
Date:	March 8, 1989	
adjacent provided water con	to the San Juan River. in Exhibit 6, Floodplain (ydrogeology of the floodplain alluvium. The results of this investigation are Groundwater Characterization. Ground- harges is present south of the San Juan
Plans for	Implementation:	
See respon	se.	
SECTION 3		
Confirmati	on of Implementation:	
Checked by	-	Date:
Approved b	y:	Date:

SECTION 1			
Site:	Shiprock, New Mexico	Date	: August 21, 1986
Document:	Remedial Action Plan, Char	nge No. 13	
Commentor:	Masud Zaman, The Navajo Na	ation	
Comment:	2		
contaminate	nt failed to provide the d water in the area and to the surface flow of the	the amount	te of the volume of th of contaminated water bein
SECTION 2			
Response:		By:	P. Longmire, TAC
Date:	March 8, 1989		
See recons			
see respons	e to comment 5.		
SECTION 3	e to comment 5.		
SECTION 3	n of Implementation:		
SECTION 3 Confirmation			Date:

SECTION 1		
Site:	Shiprock, New Mexico Date: August 21, 1986	
Document:	Remedial Action Plan, Change No. 13	
Commentor:	Masud Zaman, The Navajo Nation	
Comment:	3	

The document also failed to provide the true background water quality of the alluvial water in the area. The two well points, 631 and 632, located in the alluvium north of the river channel do not provide the true background quality of the alluvial water. That the water quality at these locations is very poor may be due to the explanation provided in this document or because of other reasons. But, an Indian Health (IHS) 1980-81 hydrologic investigation of the north bank alluvium plain of the river indicated that the alluvial water in the area is of good quality about a mile east southeast of well points 631 and 632 with total dissolved solids (TDS) ranging between 500 to 800 mg/l. Whatever the reason may be, it is a small area located either side north of the 666 bridge where the quality of the alluvial water is poor.

In the light of above, in order to establish a true background water quality in the alluvium, additional areas should be investigated e.g. area east southeast of the bridge on the north bank. Helium Plant Infiltration Gallery area southwest and the area southeast of well points 608 and 609 along the south bank of the San Juan River.

SECTION 2			
Response:		By:	P. Longmire, TAC
Date:	March 8, 1989		

Monitor wells 634 and 645 are upgradient from the contaminated floodplain alluvium; monitor well 634 is north of the San Juan River, approximately one mile east of the stabilized tailings pile and monitoring well 645 is in the southeast portion of the floodplain alluvium adjacent to the San Juan River. The total dissolved solids (TDS) of water samples collected from monitoring wells 634 and 645 are 807 mg/l and 645 mg/l, respectively. These values are the lowest in the area and represent background water quality. Additionally, well points 638, 639, 670, 671, and 672 were installed along the north side of the San Juan River where the TDS ranged between 2,090 mg/l and 3,210 mg/l.

SECTION 1		
Site:	Shiprock, New Mexico	Date: August 21, 1986
Document:	Remedial Action Plan, Change	No. 13
Commentor:	Masud Zaman, The Navajo Natio	n
Comment:	4	
San Juan		the surface water in the adjacent fected by contamination in the radation of the river.
contaminate		at the point of discharge of the the surface water quality upstream
SECTION 2		Pur D Languina TAC
Response: Date:	March 8, 1989	By: P. Longmire, TAC
Date:	Fier Cit 0, 1909	
contain c	concentrations of nitrate, es above EPA MCLs. These uninated groundwater has not	87 from the San Juan River do not molybdenum, uranium, and other data, provided in the report, show impacted surface-water quality of
Plans for I	mplementation:	
SECTION 3		
Confirmatio	n of Implementation:	
Checked by:		Date:
Approved by	:	Date:

SECTION 1	
Site:	Shiprock, New Mexico Date: August 21, 1986
Document:	Remedial Action Plan, Change No. 13
Commentor:	Masud Zaman, The Navajo Nation
Comment:	5
	, paragraph 4, line 3 states that "however, chemical pollutio sources at times of very low river flow would be significant."
	s that significant amount of contaminated groundwater to be ced to surface water during the low river flow?
point	11 the NTUA water supply be impacted during the low flows at the of withdrawal located at a short distance downgradient of nated area?
c. What is	the DOE's estimated low river flow?
SECTION 2 Response:	By: J. Dupuy, TAC
Date:	August 15, 1989

The statement on page 4, paragraph 4 in the March, 1986 version of the PSCR regarding surface-water quality and discharging contaminated groundwater is incorrect. Surface-water quality collected in periods of low flow (early spring 1987) show no evidence of contamination. Sampling took place in March and May 1987. The contribution of contaminated groundwater from the floodplain on the water quality of the San Juan River may be quantitatively estimated as follows:

Assume:

- 1. Contaminated groundwater enters the San Juan River along the length of the floodplain equal to the distance from monitor well 603 to well point 640, i.e. 4,900 feet (ft) (Fig. 1.1).
- 2. This contaminated groundwater flows from the floodplain into the river under a hydraulic gradient equal to the steepest hydraulic gradient measured for groundwater in the floodplain, i.e. 0.01 (Fig. 3.1).

SECTION 2	(con't).			
Response:		By:	J. Dupuy, TAC	
Date:	August 15, 1989			

- The saturated floodplain deposits are 15 feet thick (DOE 1986, Remedial Action Plan).
- The saturated hydraulic conductivity of the floodplain deposits is assumed to be equal to the value reported for coarse sand, i.e. 15 ft/day (Todd, Groundwater Hydrology, 1980).
- The San Juan River has a 62-year, low-flow average of 400 cubic feet per second (cfs) at Shiprock (per conversation with J. Schaffer, USGS, July 1989).
- The water quality effects of mixing contaminated alluvial groundwater with San Juan River water may be calculated through the use of a simple mixing-cell model.

Calculations:

1. Contaminated floodplain groundwater flux into San Juan River.

Q = KiA
=
$$(15 \text{ ft/day}) (0.01) (4,900 \text{ ft}) (15 \text{ ft})$$

= $11,025 \text{ ft}^3/\text{day}$
= 0.13 cfs

2. Mixing Cell Model
$$C_f = \frac{Q_1C_1 + Q_2C_2}{Q_1 + Q_2}$$

Where:

Cf = resulting concentration
Q1 = discharge fom contaminated floodplain, 0.13 cfs
C1 = highest reported concentration of sulfate from floodplain samples, 36,900 mg/l
Q2 = discharge from San Juan River, 400 cfs
C2 = highest reported concentration of sulfate from San Juan River samples, 75 mg/l

$$C_f = (0.13 \text{ cfs}) (36,900 \text{ mg/l}) + (400 \text{ cfs}) (75 \text{ mg/l}) (0.13 \text{ cfs}) + 400 \text{ cfs})$$

The estimated conservative impacts of contaminated floodplain groundwater on the water quality of the San Juan River are small. Sulfate concentration in the San Juan River after addition of groundwater from the floodplain is sixteen (16) percent higher than the concentration prior to addition of floodplain groundwater. The value (87 mg/l) is still well below the EPA and State of New Mexico Secondary Drinking Water Standard recommended maximum concentration of 250 mg/l. Therefore, the NTUA water supply will not be affected.

SECTION 1

Site: Shiprock, New Mexico Date: August 21, 1986

Document: Remedial Action Plan, Change No. 13

Commentor: Masud Zaman, The Navajo Nation

Comment: 6

A statement on page 4, paragraph 2 quotes the apparent contamination of groundwater across the San Juan River has limited importance for several reasons. Foremost is the fact that there is no use of this water, and utilization of the water is unlikely because of the availability of a better quality municipal supply. Another reason is that the other sources of contamination to the groundwater, both natural (leaching of salts from Mancos Shale) and man made (concentration of salts in irrigation return flow), tend to overshadow the effects of apparent contamination from the mill. Finally, there are no drinking water standards for either molybdenum or vanadium. This may be attributed to the fact that data on toxic effects in humans for the two elements are lacking.

Our analysis of the statement follows:

- a. Under the existing conditions the first reasoning seems quite logical i.e. alternate and better quality surface water is readily available against the poor quality groundwater for all practical uses. But, conditions may change in the future. The contaminated alluvial water in the questionable area, as proposed, could be restricted for human/livestock uses through institutional control or other means but, what about the discharge of contaminated water through seepage into the main body of the river during the low flows and degrading the public water supply as discussed in items 5 above? How will this problem be controlled?
- b. Under the second reasoning that natural leaching from Mancos Shale and man made concentration of salts in irrigation return flow overshadow the effects of apparent contamination from mill. We disagree with the first part of this reasoning. As discussed in item 3 above that, except the small area near the bridge, alluvial water in rest of the area is of acceptable quality for all practical uses (IHS 1981). Moreover, two existing Wells 12K-300D and 12K-300E both located approximately 2 miles north northwest of Shiprock (Location. Quad 17 11 65 x 13 x 40 miles and Quad 17-11 35 x 13 95 miles respectively) 14 and 20 feet deep respectively tap the alluvium of San Juan Floodplain. The water quality in both wells is good with TDS 762 and 493 mg/l respectively (data can be provided on request). If leaching from Mancos shale was the reason then all alluvial water in the area could have been contaminated but, that is not the case.

As far as the contamination from irrigation flow return is concerned, it may be true for certain areas but is not true for all alluvial water in the area.

SECTION 1

NOTE: The Bureau of Reclamation (BOR) in cooperation with Navajo Division of Water Resources is in the process of starting a salinity study to determine the impact of irrigation return flow in the San Juan River between Hogback and Shiprock. This study will also reveal the contribution of salt to the shallow alluvial water from return flow.

Under the third reasoning, it is true that presently the standards for Vanadium and Molybdenum are lacking but, per amended Safe Drinking Water Act of May, 1986, the standard for these elements will be forthcoming within next three years.

However, there are at least preliminary indications that health effects for molybdenum and vanadium do occur at some yet undefined level.

Suggestions and Recommendations

- Redefine the area contaminated by the milling operation including the sandbar area and the area southeast of well points 608 and 609.
- Determine a true background chemical quality of the alluvial water in the area.
- Determine the impacts of contaminated groundwater through seepage on the NTUA water supply in the San Juan River during the low flows.
- 4 If the institutional control of the contaminated area is the alternative DOE is planning to adopt then in that case a proper monitoring and surveillance program should be adopted so that long term changes could be noted and its impacts on the NTUA water supply in particular and on surface flow in general could be evaluated.
- 5. Finally, this would seem to be an appropriate time to point out that in 40 CFR 192.2 Standards for the Control of Residual Radioactive Materials call for control for a minimum of 200 years and up to 1,000 years. Because control is to be inherent in the design plan, monitoring after disposal is not required to demonstrate compliance.

Since migration from the sine has been detected during the final construction stages of the remedial action, it seems apparent that the plan may have some potentially fatal flaws. This should be the basis enough to call for a reevaluation of the RAP to make sure that those designs flaws are identified and remediated if necessary.

SECT	ION 2			
Resp	onse:	Comment 6	By:	P. Longmire, TAC
Date	•	March 8, 1989	_	
6a.	discha	periods of low flow, rge of contaminated groun ated with tailings leach	ndwater.	Contaminated groundwate
6b.	ground and 6 Mancos adjace regard alluvi qualit irriga	quality within the water samples collected 45) contain TDS values rang. Shale on alluvial grount to the Shippock site ing the variability of um. Impacts of irrigatly probably affects ground tion ditch. This concept of groundwater monitor.	from backging from 6 ndwater ar . The D water co ion retur dwater in pt has not	ground monitoring wells (63,000 to 850 mg/l. Impacts of the not completely understood agrees with your commentuality in the floodplaining flow on alluvial water mediately subjacent to the been verified because of
Plan	s for I	mplementation:		
	ION 3			
		n of Implementation:		
	ked by:			Date:
Appr	oved by			Date:

SECTION 2

Date: March 8, 1989 By: Pat Longmire

Response: Summary of the DOE Investigations, Comment 6 Suggestions and

Recommendations

The DOE has redefined the zone of contaminated groundwater within the floodplain alluvium south the San Juan River. Tailings leachate within the floodplain alluvium discharges to the San Juan River with no detectable impacts on surface water quality during periods of low flow.

Background water quality within the floodplain alluvium adjacent to the Shiprock site has been established. The concentration of TDS in background groundwater in the floodplain alluvium ranges between 600 and 850 mg/l.

The NTUA water supply is not being impacted by discharge of tailings leachate to the San Juan River, based on several rounds of surface-water samples collected at the site. Concentrations of molybdenum, nitrate, and uranium within discharging, contaminated groundwater are below EPA maximum concentration limits for these constituents.

A long-term, environmental-monitoring program will be addressed in the surveillance and maintenance document for the Shiprock site. This program will focus on groundwater and surface-water quality conditions at the site.

SECTION 1	
Site:	Shiprock, New Mexico Date: August 12, 1986
Document:	Remedial Action Plan, Change No. 13
Commentor:	Samuel Diswood, Navajo Nation
Comment:	Paragraph 2
points up These cont analysis	t discovery of groundwater floodplain alluvium contamination the fact that adequate initial testing may not have been done tamination conditions should have been discovered in the initial of the site. The two wells, No. 631 and 632, which show uranium ion, also show the extent to which groundwater contamination can
SECTION 2 Response:	Paragraph 2 By: B. Peel, TAC
Date:	
Date.	June 27, 1989
extent of intended problem. were based	d on the results of the earlier study. Results of the mos vestigations are presented in Exhibit 6, Floodplain Groundwate
Plans for	Implementation:
See respons	se.
SECTION 3	
Confirmatio	on of Implementation:
Checked by	
Approved by	/: Date:

SECTION 1	
Site:	Shiprock, New Mexico Date: August 12, 1986
Document:	Remedial Action Plan, Change No. 3
Commentor:	Samuel Diswood, Navajo Nation
Comment:	Paragraph 3
for the possible	the alternative wildlife mitigation plans proposed to compensat oss of the waterfowl ponds? Are there any long range plans for future reinstatement of the ponds? Are there any plans to close ontaminated seeps and pond in the floodplain alluvium to wildlife
SECTION 2	
Response:	Paragraph 3 By: R. Peel, TAC
Date:	June 27, 1989
contaminate contaminate the Navajo the propos will addre from the	re found to contain contaminated water due to inflow of groundwater from the surrounding floodplain. The descept and ponds have been backfilled with the concurrence of Nation and further action is not needed at this time. After the EPA groundwater protection standards are finalized, the DO ass the need for groundwater remediation in a program separate current UMTRA Project. The DOE may then reconsider the need for wildlife mitigation efforts.
Plans for 1	mplementation:
See respons	e.
SECTION 3	
Confirmatio	on of Implementation:
Checked by:	
Approved by	/: Date:

SECTION 1		
Site:	Shiprock, New Mexico Date: August 12, 1986	
Document:	Remedial Action Plan, Change No. 13	
Commentor:	Samuel Diswood, Navajo Nation	
Comment:	Paragraph 4	
Processing at Shiproc the escarp pond areas outside th	on to the map on page 6 of the document, "Appendix Site Characterization Report for the Uranium Mill Tail ock, New Mexico, March, 1986" shows the control fence rundered to the San Juan River, blocking access to the sales. The map also shows what appears to be a retermined new designated site inclusion. This pond should not the designated site if it currently is not.	lings Site nning from waterfow ntion pond
SECTION 2 Response:	Paragraph 4 By: R. Peel, TAC	
Date:	June 27, 1989	
boundary w	area will be included in the final disposal site bounda will be described in the final Surveillance and Mainten ed within a few months.	
Plans for I	Implementation:	
See respons	se.	
SECTION 3		
	on of Implementation:	
Checked by:		
Approved by	y: Date:	

SECTION 1	
Site:	Shiprock New Mexico Date: July 1, 1985
Document:	Remedial Action Plan, Mod. 3
Commentor:	Department of the Interior-BIA
-Page 1, Se	ection B., Paragraph 1
molybdenum concentrati elements	sentence of this paragraph states that "Constituents, other than and vanadium on the other side of the river were at background ions" What were the levels of concentration, if any, of these (molybdenum/vanadium) on this (south?) side of the river? Should measured to be of concern?
SECTION 2	
Response:	By: J. Dupuy - TAC
Date:	October 9, 1989
contaminate between 0. for vanac groundwater	concentrations of molybdenum and vanadium, within the ed floodplain groundwater on the south side of the river, ranged 01 mg/l to 0.50, mg/l for molybdenum, and 0.01 mg/l to 0.60 mg/l dium. Because withdrawals of this contaminated floodplain are restricted and this contaminated groundwater is diluted to kground concentrations in the San Juan River, there is no present
concern.	
	Implementation:
	Implementation:
Plans for SECTION 3	Implementation:
Plans for SECTION 3	on of Implementation:

SECTION 1		
		Date: <u>July 1, 1985</u>
Document:	Remedial Action Plan, Mod	
Commentor:	Department of the Interio	or - BIA
-Page 1, Se	ction B., Paragraph 2	
toxic cons		agraph states refers to an absence t appear to be consistent with t
and uraniu hazardous, acknowledge	m which were found were they were present.	ons of TDS, chloride, nitrate, sulfat re at levels less than those consider May we suggest that these findings at while they were existent that t re not to be of concern.
SECTION 2		
Response:		By: R. Peel - TAC
Date:	October 9, 1989	
	in general agreement with made. See Section 3.0, RA	n the comment and appropriate revision P Text Revisions.
Plans for 1	mplementation:	
SECTION 3		
Confirmatio	on of Implementation:	
Checked by:		Date:
Approved by		

EXHIBIT 5

SEP & 8 1986

DM:NO-14 DOCU CONTROL/SHP

Mr. Malculm R. Enapp Nuclear Regulatory Commission 7915 Bastern Avenue Silver Springs, MD 20910

Dear Mr. Enapp:

Per your letter of August 8, 1986, the MRC concurs with Changes Mo. 14 and No. 15 presented in Modification No. 3 to the Shiprock, New Mexico, Remedial Action Plan (RAP). Both the Navajo Nation and the Bureau of Indian Affairs (BIA) have also indicated their acceptance of these two changes and, like the MRC, have extensive comments regarding Change No. 13.

Because it will take several weeks to adequately respond to Tribe/Agency comments on Change No. 13, the DOE has chosen to issue Modification No. 3A, which contains only Changes No. 14 and No. 15. Change Mo. 13 will be re-issued at a later date as Modification No. 4.

Therefore, enclosed are four copies of Modification No. 3A. Also enclosed for your execution are four original signature pages.

Please sign the enclosed pages, indicating your concurrence with Modification No. 3A, and return them to this office as soon as possible so that they may be forwarded to the Navajo Nation and the BIA for execution. Pollowing execution of the signature pages by all parties, a modification to Cooperative Agreement No. DB-PC04-83AL16258 between DOE and the Navajo Tribe will be executed to incorporate Modification No. 3A as part of the cooperative agreement.

Should you have questions regarding this matter, please contact Deborah Mann of my staff at PTS 846-1243.

Sincerely,

Original Signed by

John G. Themelis, Project Manager Branium Mill Tailings Project Office

Enclosures (8)

oc w/o enclosures:

L. Stepp, JBG

J. Oldham, MX-P

J. Boyal, CIRD

D. Gillen, MRC

P. Bosiljevac, DMTRA

OFFICIAL FILE COPY

CONCURRENCES

RTG SYMBOL

UMTRA: PBC
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MITIALS/SIG

DATE

OCT 28 1986

Mr. Charles Damon Executive Director Div. of Resources The Mavajo Mation P.O. Box 308 Window Rock, AS 86515

Attention: Mr. Tomay Begay

Dear Mr. Damon:

On July 24, 1986, your office submitted comments on Modification No. 3 to the Shiprock Remedial Action Plan. On August 12, 1986, we transmitted to you responses to those comments. We believe that the responses adequately addressed the Mavajo Mation comments and that no unresolved issues remain regarding this particular set of comments. On August 21, 1986, additional comments on Modification No. 3 were submitted by your office. All of these additional comments related only to Change No. 13, Groundwater in Floodplain Alluvium. Therefore, the DOZ assumes that, since the July 24 comments have been resolved, the Mavajo Mation concurs with Change No. 14, Radon Barrier Thickness, and Change No. 15, Saismic Stability of Embankment.

Both the MRC and the BIA have indicated their acceptance of Changes No. 14 and No. 15 and, like the Navajo Nation, both agencies have extensive comments regarding Change No. 13. Because it will take several weeks to adequately respond to Tribe/Agency comments on Change No. 13, the DOE has chosen to issue Modification No. 3A, which contains only Changes No. 14 and No. 15, in order to obtain final concurrence and close the issues addressed in these two changes. Change No. 13 will be re-issued at a later date as Modification No. 4.

Enclosed for your files is one copy of Modification No. 3A. As Deborah Mann has discussed with Tommy Begay of your staff, four original signature pages for your execution will be forwarded to you from the BIA after Mr. Wilson Barber has signed them.

Upon receipt of the signature pages, please sign them, indicating your concurrence with Modification Mo. 3A, and return them to this office as soon as possible. Pollowing execution of the signature pages by all parties, a modification to Cooperative Agreement Mo. DE-PC04-83AL16258 between DOE and the Mavajo Tribe will be executed to incorporate Modification Mo. 3A as part of the Cooperative Agreement.

BOSILARVA DATE OF 10/98/86 UMTRA ARTHUR DATE 10/27/86 RTO SYMBOL UMBA. THEMELIS 10/28/86 R.O 57000 DANTONIC DATE 10/28/86 RTG SYMBOL DISTALBISIO DATE RTG SYMBOL PHTIMLBIBIG DATE RTO SYMBOL **BUTULBISIG**

DATE

OFFICIAL FILE COPY

DOE F 1286.10 (7-70) John R. D'Antonio, Operations Group Leader Uranium Mill Tailings Project Office

Enclosure

cc w/c enclosure:

L. Stepp, JEG

J. Oldham, MK-E

G. Dixson, CIRD

F. Bosiljevac, UMTRA



Department of Energy Albuquerque Operations Office P.O. Box 5400 Albuquerque, New Mexico 87115

CT 1 4 1986

Mr. Wilson Barber Area Director Navajo Area Office Bureau of Indian Affairs P.O. Box M Window Rock, AZ 86515

Dear Mr. Barber:

Per your letter of July 1, 1986, the BIA's issues of concern regarding the Revised, Final RAP Modification No. 3, Attachment 1, for the Stabilization of the Inactive Mill Tailings site at Shiprock, New Mexico, relate to Change No. 13, Groundwater in Floodplain Alluvium. No issues of concern were presented on Change No. 14, Radon Barrier Thickness, or Change No. 15, Seismic Stability of Embankment; therefore, the DOE assumes that the BIA concurs with these two changes.

Both the NRC and the Navajo Nation have indicated their acceptance of Changes No. 14 and No. 15, and both agencies have extensive comments on Change No. 13. Because it will take several weeks to adequately respond to Tribe/Agency comments on Change No. 13, the DOE has chosen to issue Modification No. 3A, which contains only Change No. 14 and No. 15, in order to obtain final concurrence and close the issues addressed in these two changes. Change No. 13 will be re-issued at a later date as Modification No. 4.

Therefore, enclosed for your files is one copy of Modification No. 3A. Also enclosed for your execution are four original signature pages.

Please sign the enclosed pages, indicating your concurrence with Modification No. 3A, and return them to this office as soon as possible so that they may be forwarded to the Navajo Nation for execution. Following execution of the signature page by all parties, a modification to Cooperative Agreement No. DE-FCO4-83AL16258 between DOE and the Navajo Tribe will be executed to incorporate Modification No. 3A as part of the cooperative agreement.

Should you have questions regarding this matter, please contact Deborah Mann of my staff at (505) 846-1243.

Sincerely.

Golde La Leme Ci

John G. Themelis, Project Manager Uranium Mill Tailings Project Office

Enclosures (5)

cc w/o enclosures:

L. Stepp, JEG

J. Oldham, MK-F

T. Coalson, CIRD

F. Bosiljevac, UMTRA

T. Begay, NN

EXHIBIT 6

FLOODPLAIN GROUNDWATER CHARACTERIZATION

APPENDIX E OF THE SHIPROCK PROCESSING SITE CHARACTERIZATION REPORT

SHIPROCK, NEW MEXICO
INACTIVE URANIUM MILL TAILINGS SITE

AUGUST 1989

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1.0 INTRODUCTION

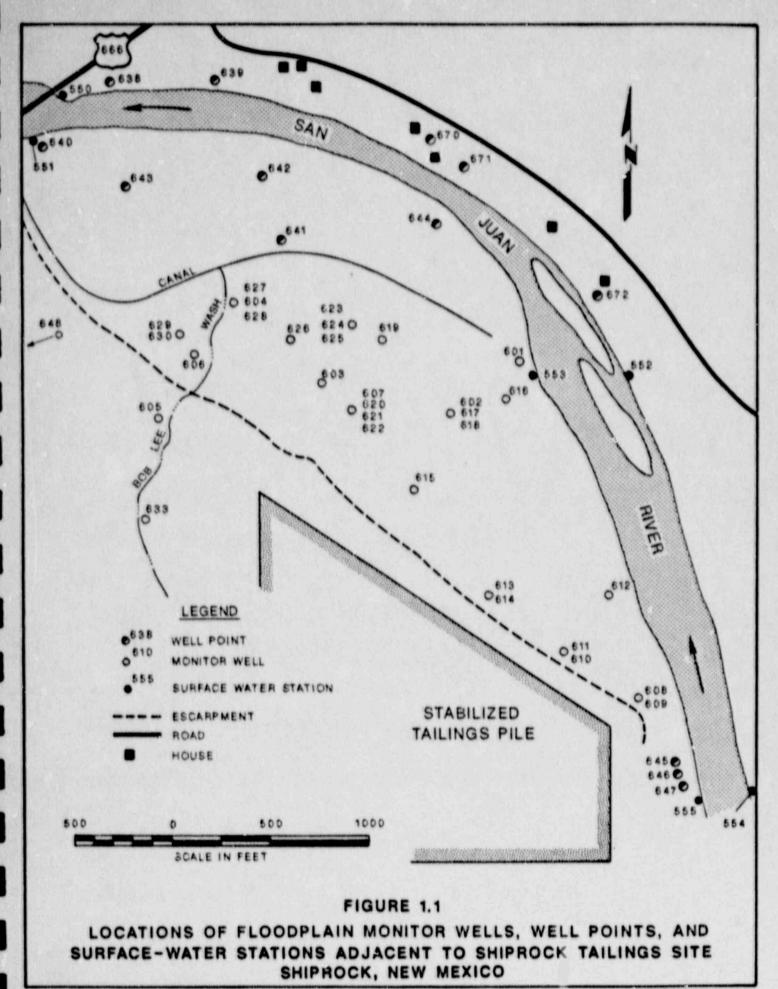
The discharge of uranium tailings raffinate to Bob Lee Wash and the floodplain alluvium while the Shiprock uranium processing site was active resulted in groundwater contamination in the floodplain alluvium south of the San Juan River. Tailings raffinate initially was discharged to the floodplain alluvium in 1954 (DOE, 1984); the discharge continued for an undetermined amount of time.

The purpose of this report is to discuss additional groundwater monitoring data collected in the floodplain alluvium and to investigate the potential for underflow of contaminated groundwater beneath the San Juan River. Groundwater quality data and the migration of several solutes (including fluoride, sulfate, uranium, vanadium, molybdenum, nitrate, and total dissolved solids) are addressed.

Thirteen well points (numbers 638-647 and 670-672) were installed to supplement the 31 existing monitor wells. Five of these well points were installed on the north side of the San Juan River near and within the residential area. All well points were installed near and along the San Juan River to monitor groundwater quality and water levels in the floodplain alluvium (Figure 1.1). The well points consist of a steel five-foot well screen, a fine to ten-foot steel blank, and a locking cap. Interpretation of groundwater quality data is based on the average concentrations from rounds of samples collected by the Technical Assistance Contractor (TAC) to the DOE.

Conclusions presented in this report are that:

- a) No transverse flow of groundwater can occur beneath the river, because in this reach the river serves as a line discharge for groundwater from the alluvium on both sides.
- b) Both the lack of transverse underflow and the high contrast in solute concentrations between the south and north sides of the river support the conclusion that contaminants are not being transported to the north side by groundwater.
- c) Additional protection of public health is the result, since all the nearby residents north of the river receive treated municipal surface water for domestic use from the town of Shiprock.



2.0 WATER USE

Several residents immediately north of the San Juan River, across from the contaminated floodplain alluvium, use surface water for domestic purposes. This treated San Juan River water is provided to the residents by the town of Shiprock. A field search and inquiries have revealed no existing domestic or other wells north or south in the floodplain alluvium of the San Juan River near the residential area.

3.0 GROUNDWATER FLOW

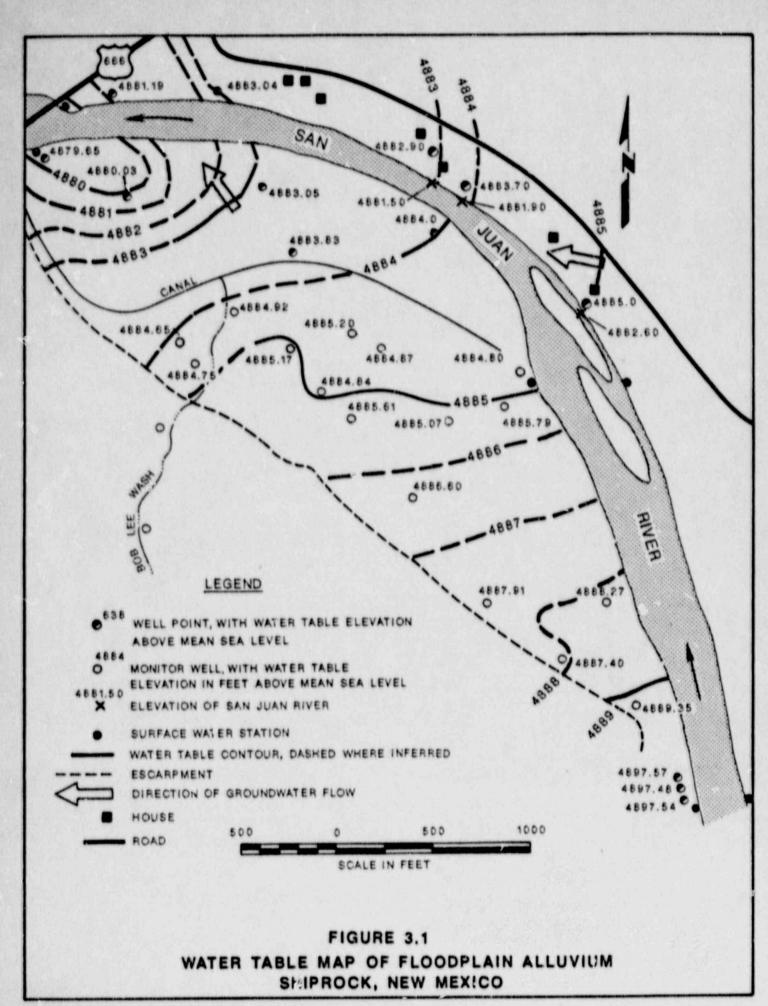
A water table map for the floodplain alluvium adjacent to the Shiprock tailings sice is shown in Figure 3.1. Groundwater flow south of the San Juan River is generally to the northwest, roughly parallel to the river. Potentiometric data obtained from well points 670-672 north of the San Juan River were measured in January 1988, whereas water table elevations were measured at well points 638 and 639 in May 1987. Water table elevations were measured at well points south of the San Juan River in May 1987.

In the eastern portion of the floodplain alluvium (see Figure 3.1) groundwater flow is parallel to the San Juan River and the river is neither losing water to, nor gaining water from, the alluvial groundwater. In the downstream half of the reach, groundwater is flowing toward the river and discharging to it. Because the floodplain alluvial aquifer is unconfined and the San Juan River is gaining water from groundwater discharge on both the north and south sides of the floodplain, groundwater underflow is not occurring. Based on the present hydrogeological conditions, tailings leachate within the floodplain alluvium is not migrating beneath the San Juan River and, accordingly, is not affecting groundwater quality to the north.

The hydraulic gradient within the floodplain alluvium ranges from 0.0009 to 0.002 foot per foot under most of the area shown in Figure 3.1, although the gradient in the northwesternmost part of the area is steeper. The discharge from a continuously flowing well (monitor well 648) completed in the Dakota Formation and located above the floodplain on the escarpment flows to the northwesternmost area in the floodplain. Ponded water from this flowing well recharges the alluvium.

During periods of high spring runoff in the San Juan River, the river water backs up into the canal (Figure 3.1) from the west end of the floodplain eastward towards the closed end of the canal, separating the floodplain alluvium south of the river. Groundwater recharge of the alluvium occurs during these periods of high water. This recharge influences the rate of groundwater flow by causing seasonal changes in hydraulic gradient. Net flow on an annual basis, however, results in groundwater discharge to the river in the downstream half of the reach considered here.

Alluvial monitor wells 529, 630, and 633 are weakly artesian, based on water-level measurements provided by the DOE (1986a). The floodplain alluvium is a regional or local discharge zone for the underlying Mancos Shale, characterized by upward vertical gradients. In addition, these vertical gradients inhibit downward migration of contaminants into the Mancos Shale. These vertical gradients, in combination with gaining conditions for the San Juan River, may also inhibit underflow within the alluvial aquifer beneath the San Juan River.



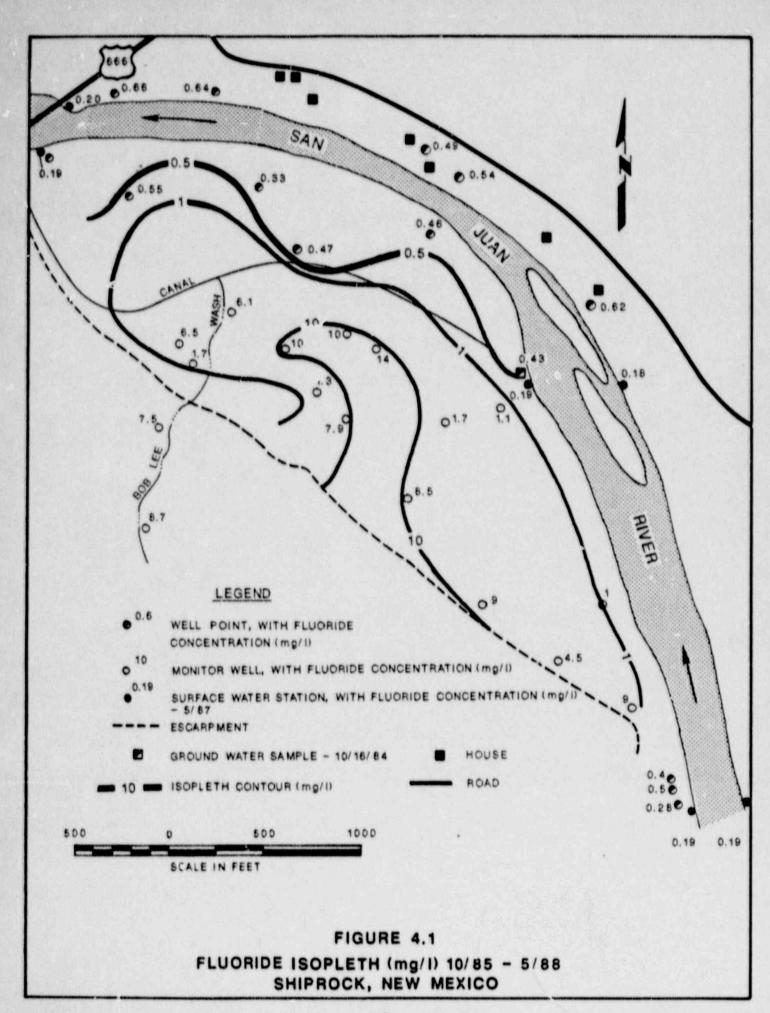
4.0 GROUNDWATER QUALITY

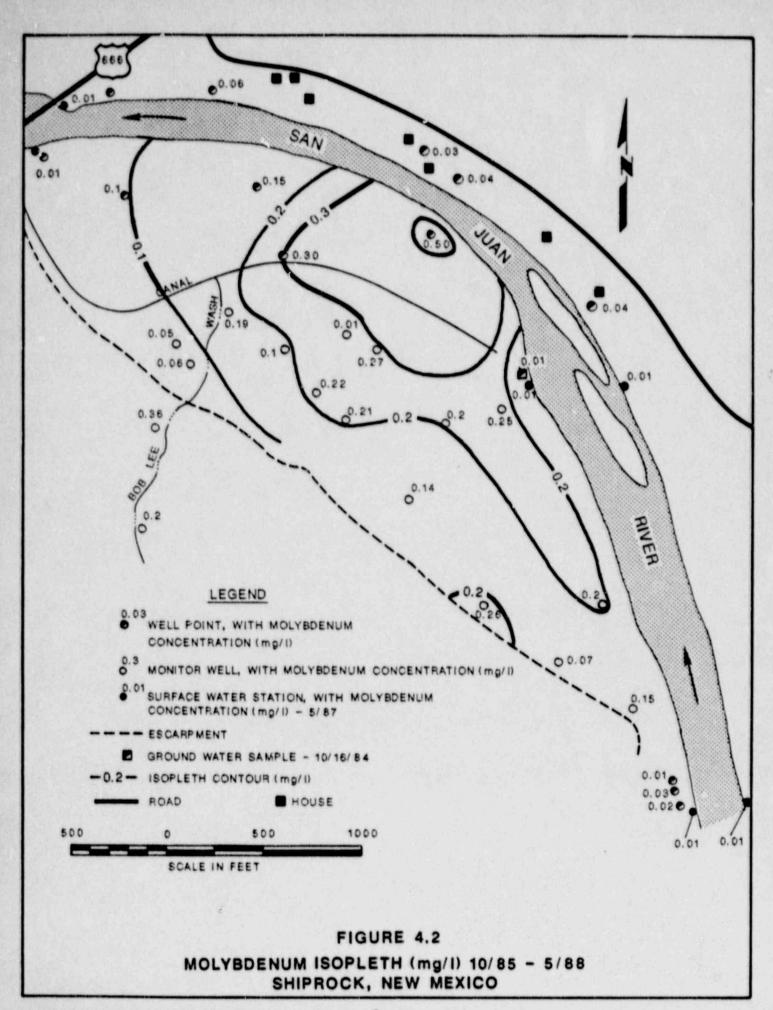
Initial discharge of tailings raffinate in 1954 resulted in soil and groundwater contamination in the local alluvial aquifer; the contamination has not been removed by natural flushing. Soil contamination within the floodplain alluvium is likely because of the past discharge of tailings raffinate to unlined ponds and other surface discharges to Bob Lee Wash. The extent of soil contamination is not known; however, it probably correlates closely with the extent of groundwater contamination.

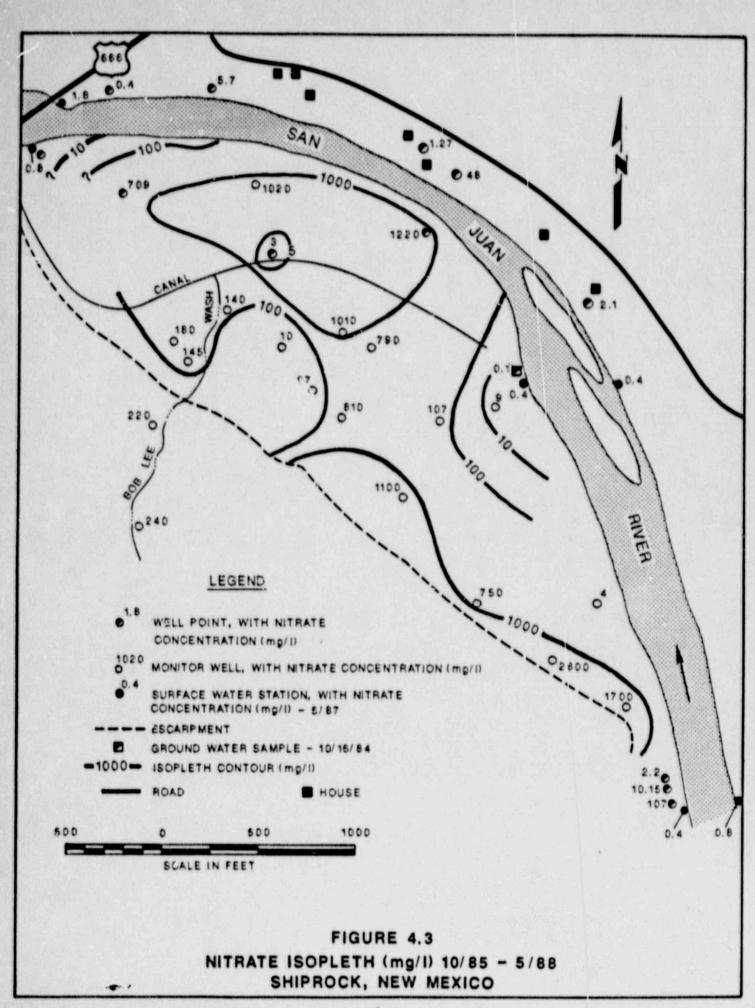
Dissolved contaminants within the floodplain alluvium at the Shiprock site include fluoride (F), sulfate (SO_4) , nitrate (NO_3) , uranium (U), vanadium (V), molybdanum (MO), and total dissolved solids (TDS). Figures 4.1 through 4.7 represent isopleth maps for F, Mo, NO3, SO4, TDS, U, and V, respectively. Analytical results obtained from groundwater samples collected during this investigation were used to construct these isopleth Water quality data are summarized in Attachment 1 at the end of this report. Groundwater monitoring data for those monitor wells south of the canal are tabulated in a previously published report (DOE, 1986a). Forty-one monitor wells, including the 13 new well points and six surface water stations, are included in the water monitoring network for the floodplain alluvium. Solute concentrations shown on Figures 4.1 through 4.7 represent the average of two rounds of sampling from each of the monitor wells and wells points (excluding well points 640, 643, 670, 671, and 672, which were sampled once on March 19, 1987). Groundwater and surface water sampling and analytical techniques were performed in accordance with procedures described in detail by the DOE (1986b). Moditor well completion information is presented in a separate report by the DOE (1986a).

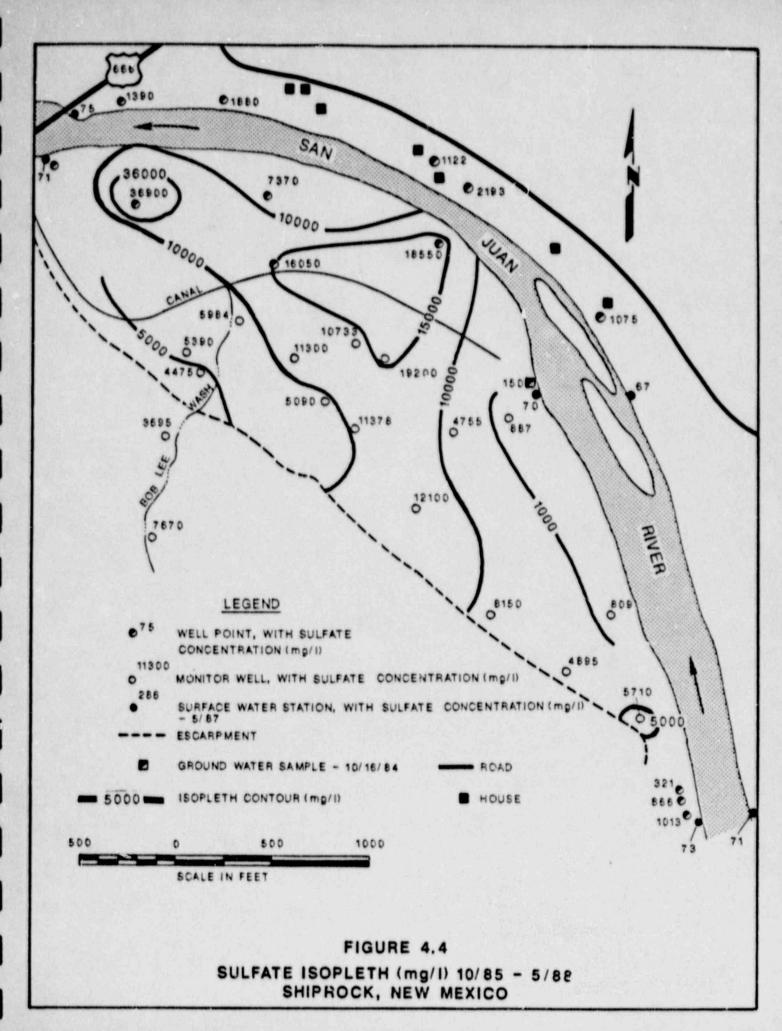
Figures 4.1 through 4.7 show that a large portion of the floodplain alluvium is contaminated by uranium tailings leachate. Most of the contaminated groundwater occurs in the central portion of the floodplain alluvium. Well point 643, located near the northwest portion of the alluvium in the study area, contained the poorest groundwater quality; maximum concentrations of Mo, NO3, SO4, TDS, U, and V were 0.1, 709, 36900, 64200, 4.32, and 0.1 milligrams per liter (mg/l), respectively (see Figures 4.2 through 4.7). Well points 640 and 643 were not sampled in May 1987 because the ground surface was flooded by the San Juan River.

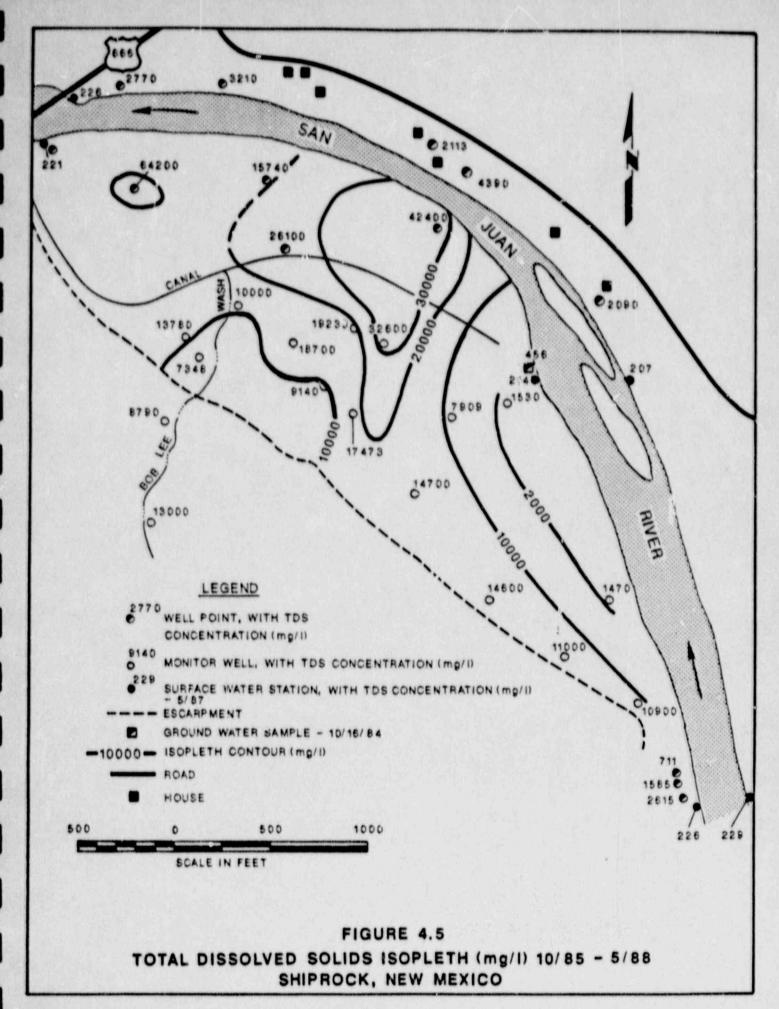
Well point 647, installed within the southeastern portion of the floodplain alluvium along this reach of the San Juan River, serves as a source of background water quality data (Figure 1.1). Well point 647 contains the lowest TDS concentrations (588 mg/l for the May 1987 sampling round) of the background wells. For this well point, the average concentrations of F, Mo, NO3, SO4, V, and U from sampling in March and May 1987 were 0.4, 0.05, 1.15, 321, 0.06, and 0.01 mg/l, respectively.

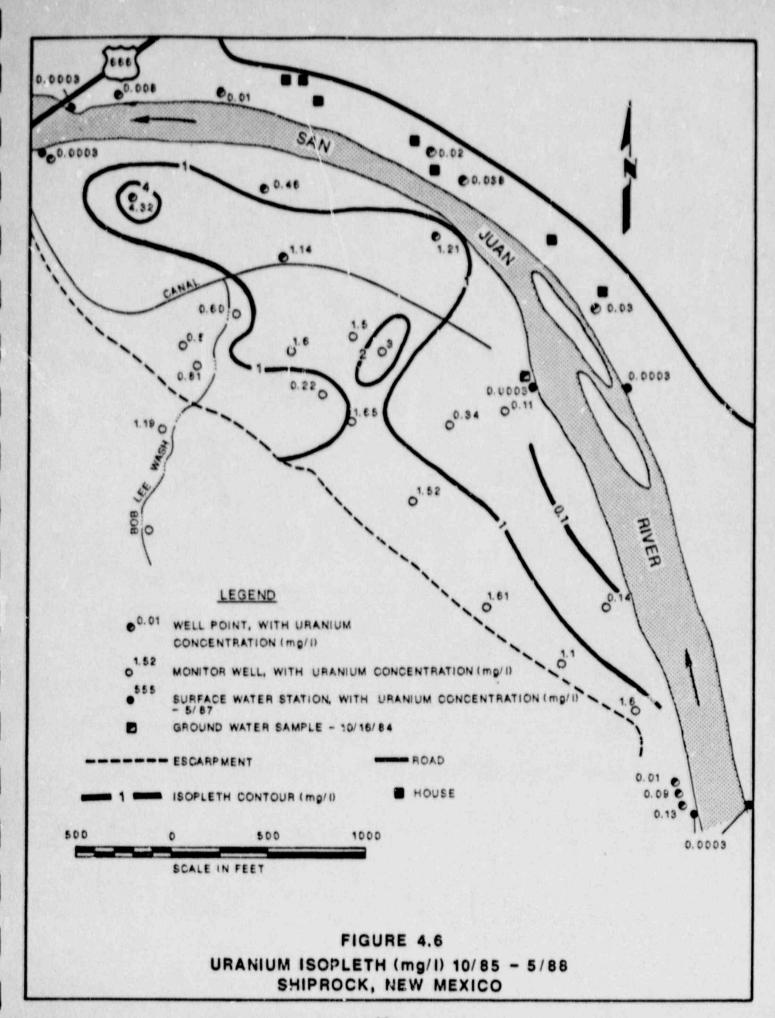


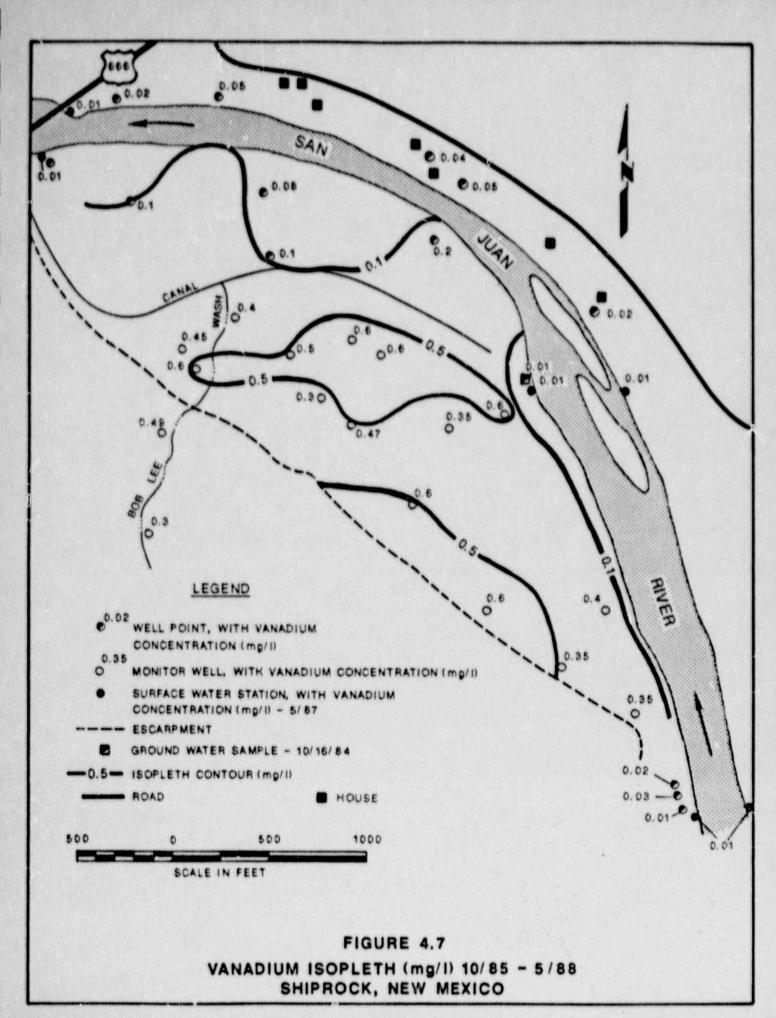












Contaminated groundwater discharges to the San Juan River with no detectable impact to surface water quality (sample locations 550 through 555; see Attachment 1) (see Figures 4.1 through 4.7). Concentrations of solutes do not vary outside the expected range of analytical accuracy in surface water samples collected along the San Juan River (see Figures 4.1 through 4.7). Solute concentrations in surface water samples are less than solute concentrations in groundwater samples. Surface water stations 554 and 555, upriver from well points 645 through 647, generally had even lower concentrations of the above solutes, where average surface water concentrations of Mo, U, and V were 0.1, 0.004, and 0.2 mg/l, respectively (see Attachment 1).

Concentrations of Mo and V elevated above background levels (well point 647) were reported by the DOE (1986c) north of the San Juan River. Average concentrations of Mo, NO3, U, and V in well point 638 immediately north of the San Juan River were 0.07, 0.25, 0.01, and 0.06 mg/l, respectively (see Attachment 1). Concentrations of Mo, NO3, and U in this well point were below their respective proposed EPA groundwater MCLs (Mo, NO3, 44 mg/l; U, 0.044 mg/l). Concentrations of Mo, NO3, and U in well point 639, east of 638, were also below their respective EPA proposed groundwater MCLs, but generally above concentrations detected in well point 638. Average concentrations of Mo and U in three groundwater samples obtained from well points 670 through 672 were below the proposed EPA groundwater MCLs for Mo and U (well point 670, Mo=0.03 mg/l, U=0.0179 mg/l; well point 671, Mo=0.04 mg/l, U=0.0384 mg/l; well point 672, Mo=0.04 mg/l, U=0.0281 mg/l). Nitrate concentrations in samples from well points 670, 671, and 672 were below the proposed EPA groundwater standard, excluding a sample taken in January 1988 from well point 671, which had a NO3 concentration of 141 mg/l. Two more recent analyses of groundwater samples from well point 671 taken in March and May of 1988 have NO3 concentrations of 0.9 and 2.0 mg/l, respectively. The higher initial concentration may be attributed to laboratory error.

Solute concentrations north of the San Juan River are much less than solute concentrations observed in contaminated groundwater south of the river. A comparison of analyses of samples obtained from well points 638, 639, and 670 through 672 north of San Juan River with water quality analyses from monitor wells and well points south of the San Juan River, supports the conclusion that uranium tailings leachate is not migrating beneath the San Juan River. Much higher concentrations of conservative solutes such as NO3, U, and SO4 would be observed in well points 638, 639, and 670 through 672 if such groundwater underflow was occurring. Hydrodynamic dispersion is considered inadequate to account for the observed reduction in contaminant concentrations north of the river. However, initial concentrations of U were above the EPA groundwater standard by 0.02 mg/l in well point 671. Concentrations of U have decreased in two more recent rounds of sampling. The initial higher U concentrations may have resulted from windblown, contaminated soil that was placed back in the pit used to install well point 671.

Uranium, selenium (Se), arsenic (As), Mo, SO₄, and NO₃ are soluble contaminants under the relatively oxidizing, alkaline conditions that dominate in the floodplain alluvium (Rai and Zachara, 1984). Uranium probably occurs as uranyl carbontate ($UO_2(Co_3)_2^{2^-}$ and ($UO_2(CO_3)_3^{4^-}$) species that are not significantly absorbed by aquifer material. Adsorption of these species onto aquifer materials probably is minimal under existing site conditions. Arsenic and Se occur at low microgram per liter levels within the floodplain alluvium; therefore, impacts of As and Se on groundwater quality in the floodplain alluvium are minimal.

Molybdenum may occur as $\text{MoO}_4^{2^-}$ based on thermodynamic calculations. Molybdenum forms soluble anionic complexes $(\text{MoO}_4^{2^-})$ under relatively oxidizing, alkaline conditions. Adsorption of these complexes is minimal where electrostatic repulsion occurs between the net-negative surface charge present on aquifer material and the negatively charged Mo species $(\text{MoO}_4^{2^-})$ under relatively oxidizing, alkaline conditions. Adsorption of these complexes is minimal where electrostatic repulsion occurs between the net-negative surface charge present on aquifer material and the negatively charged Mo species $(\text{MoO}_4^{2^-})$. Fluoride is also soluble and is not absorbed under the relatively oxidizing, alkaline groundwater conditions for similar reasons. Vanadium may occur as H_2VO_4^- , based on thermodynamic calculations. The geochemical behavior of V is influenced by iron (Fe), and adsorption of V by hydrous iron oxides is documented by Rai and Zachara (1984). Vanadium, however, is mobilized by soluble organic matter (total organic carbon, or TOC) under relatively oxidizing conditions, which may account for the elevated V concentrations observed at the site. The TOC concentrations generally are above 10 mg/l in both the surface water and groundwater samples collected at the Shiprock tailings site. The TOC concentrations are elevated in this area because San Juan River water and alluvial groundwater occur in a highly vegetative environment.

Sulfate concentrations within tailings leachate can decrease in groundwater because of precipitation reactions with gypsum (CaSO₄·2H₂O), based on calculations performed by PHREEQE (Parkhurst et al., 1980). Groundwater is shown to be oversaturated with gypsum by the model. Dissolved SO₄, however, is predicted to form soluble complexes with magnesium (Mg) and calcium (Ca) within contaminated groundwater; these complexes can limit the amount of SO₄ available for gypsum precipitation.

5.0 SUMMARY

Past discharge of tailings raffinate to Bob Lee Wash and the floodplain alluvium adjacent to the Shiprock site has resulted in groundwater contamination in the alluvium on the south side of the San Juan River.

Residents immediately north or south of the San Juan River are not directly exposed to, or are ingesting, contaminated alluvia? groundwater because all such residents use treated surface water provided by the town of Shiprock for domestic purposes.

Uranium tailings leachate in the floodplain alluvium south of the San Juan River is characterized by average concentrations of NO $_3$ (526 mg/l), SO $_4$ (8140 mg/l), TDS (14,328 mg/l), Mo (0.16 mg/l), U (1.03 mg/l), and V (0.38 mg/l) that are elevated above background groundwater concentrations and proposed EPA groundwater MCLs when applicable. North of the San Juan River, average concentrations of NO $_3$, SO $_4$, TDS, Mo, U, and V are 11.9, 1547, 2960, 0.04, 0.02, and 0.04 mg/l, respectively. Impacts of tailings leachate on the San Juan River are not detectable, as evidenced by uniform surface water quality upstream and downstream from the Shiprock Tailings site.

Upon promulgation of the final EPA groundwater standards, the DOE will reevaluate the groundwater issues at the Shiprock site to determine the need for further characterization, institutional controls, or groundwater restoration to assure compliance with the standards.

6.0 REFERENCES

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ATTACHMENT 1

GROUNDWATER QUALITY DATA BY LOCATION SHIPROCK UMTRA SITE

SHREACE WATER DUM TIY DATA BY LOCALION STIE: SHIPBOCK 03/47/87 TO 04/22/E?

The problem Mailton		UNIT OF		PARAMI TER		PAPAMI II R	PARAMETER	IFR	-	PARAMETER	100	PARAMETER	R
Harty Mark Caccos Color	PARAMETER	MEASIME	VAI	UE 1/- THE ERIAINTY	70	AME & THET REALISTY	VALUE -/ - (10)	TRIVINIA	VALUE	*/ -UML KIRIMI	1	OK TO COMPANY	
		18.	-	101		**	426.		45	.9.		126.	
The color	KAL SPILL					0.05	0.07			90.0		90.0	
The color	CHANGE TITLE	ME/I	,	1.0	*	1.0	1.0 1		,	0.1	,	0.4	
	VI I MATHET	MC/1		0.007		0.015	1 0.003			6.003	,	0.003	
The first Color	or those	MCA		0.003	~	0.001	0,003			0.002		0.002	
The first	SP TIME	MG/I	*	0.1		90.0	60.0			0.00		60.0	
HEAT 0.06 0.06 0.05	BYLL THM	MG/L										A 100	
He HE HE HE HE HE HE HE	NUM	MG/1		96.0		90.0	50.0			0.05		6.00	
Heart Court Cour	DHIDE	MS/L					1.0)			0.1	٠.	0.00	
Heart	MILLIA	MG/L	,	0.001		6.003	(0.005			5.00.0		200.00	
The color	M CTUM	MG/L.		46.9		40.7	1.59			3.0		11.8	
The color	RORTDE	MG/L		6.1		4.4				0.04		0.04	
TAME HIGH C C C C C C C C C	ROHIUE	MG/L		0.01		20.0	0.01			0.00		0.01	
Figure High Coll 255.3 Coll	BALT	M6/L		0.02	-	0.01	10.0.		, ,,	0.0		450.	
Fig. 10 Fig. 11 Fig. 11 Fig. 12 Fig. 12 Fig. 13 Fig. 13 Fig. 14 Fig. 15 Fig.	MUNIC TANCE	MJ/OHMO		255.		700	1000		,	0.04	,	0.01	
He High Hi	рред	M6/L		0.03									
Height Period Color Colo	ANIDE	H5/J				00.00	0 24			0.75		0.25	
STITE STATE CALCATA	HORIDE	MG/L		0.21		67.0	4.3	3.0				0.0	2.2
STITE FIGAT 0.05 0.007 0.004	IESS ALPHA	P.C.1/L					3.6	3.4				3.8	2.6
STITE High Color	USS BEIR	MCA		0.05		0.02	10.01		~	0.01		0.01	
STITE HIGH Co. C	AD	MG/I	,	0.001		0.02	10.01		,	0.04	•	0.0	
NET NEW	CHESTIN	MG/1		42.7		7.33	44.9			4.9			
No.	NEANE SE	MG/L		0.01	¥	0.01	20.02			20.0	,	0 0000	
	RCURY	MG/L					000.0	2		0.000		0.04	
	R. YBDE NUM	MGAL	~	0.4		0.01	, , ,		,	0.04	,	0.04	
He He He He He He He He	CKEL	M6/1		20.0	-	0.01	0.0			0.1		0.4	
The color of the	TRATE	me/L		10.1	,		, 0 ,			0.4		0.1	
CARBON FIGAL 24.8 1.4 27.3 30.3 1.1 35.5 31.7	TRITE	MS/L	,	0.1		0.1							
Color Colo	2 & MG3	MS/L		24.0		27.3	30.3		9			34.7	
SULTATION OF TAXABLE STATE STA	b. Laksur	1/9/1				0.0	4.0	1.1				6.9	0.9
HGAL 0.30 0.4 0.6 0.0 0.5 0.0 0.6 0.0 0.	210	CH					8.59			8.59		8.59	
PCTAL 0.0 0.4 0.4 0.4 0.6 0.9 0.6 0.6 0.6 0.6 0.6 0.6 0.6 0.6 0.6 0.6 0.7 0.9 0.7 0.9 0.7 0.0 0.6 </td <td>OCPUATE</td> <td>MG/1</td> <td></td> <td>0.30</td> <td></td> <td>0.30</td> <td>1.0 ></td> <td></td> <td></td> <td></td> <td>•</td> <td>0.1</td> <td></td>	OCPUATE	MG/1		0.30		0.30	1.0 >				•	0.1	
HGAL 2.68 e.3 2.04 0.2 0.0 0.1 0.1 0	240	PC1/1					0.0	5.0				0.0	0.0
PCTAL 0.3 0.3 0.4 0.2 0.0 0.4 0.9 0.1 0.0 0.1 0.0 0.1 0.0 0.1 0.0 0.1 0.2 0.0 0.1 0.2 0.0 0.1 0.2 0.0 0.2 0.1 0.2 0.0 0.2 0.2 0.0 0.2 0.2 0.2 0.2 0.2	TASSTILL	MC./I					1.87					2.73	•
PCIAL (0.602 0.8 0.0 1.2 0.55 0.7 0.8 3.3 0.003 HGA (0.602 0.004 1.2 0.007 0.003 0.003 0.003 0.003 HGA (0.602 0.004 1.2 0.007 0.003 0.0	224	1/134					0.0	0.4				0.0	
MEAL 0.002 0.004 0.002 0.003	228	PCT/I					6.5	0.7				1.1	1.0
MGAL 33.5 11.0 8.00 8.77 MGAL 33.5 10.54 11.0 8.00 8.77 MGAL 33.5 10.54 11.0 8.75 MGAL 120. 120. 131.8 12.5 120.1 120	FRIIM	M6/1	*			0.004	0.002			0.003		6.003	
M6/1 33.5 0.845 0.85 0.845 0.85 0.85 0.85 0.85 0.85 0.85 0.85 0.8	LICA	MG/L		8.8		11.0	B.90			8.17		87.6	
MEAL 33.5 0.54 0.54 0.845 0.845 198. 198. 198. 198. 198. 198. 198. 198.	LUER	M6/1					* ***		•			24.4	
UM MGAL 0.68 0.58 0.59 0.4 0.4 0.5 0.4 0.5 0.4 0.5 0.4 0.5 0.4 0.5	SOBTOR	M6/L		33.5		10.4	27.55			0.045		0.840	
HIGAL 120. (6.4 (6.4 (6.4 (6.4 6.5 6.5 6.6 6.6 6.6 6.4 6.4 6.5	STRONTIUM	M6/L		69.0		*****	4.0		*	M.		139.	
THRE C - DECRETE 9.5 6.9 6.6 6.6 6.6 6.4 6.5 6.5 FOLD	HEATE	MC/L		.024			1.0		*	0.4		1.0	
Print 0.8 0.9 0.7 0.6 0.0 0.4 0.5	H F TDI	ms/t.				2.44	77.5		7			22.5	
	230	PC171				0.7	0.0	9.0				0.0	6.3

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SUPERCY DATE ONALTY DATE BY LOCATION SITE, SHERRICK 33747/87 TO 04/27/89

		28/61/20 10-055	5:0-01 0.714/3/	250-01 07/06/87	220-02 00/08/87	0-01 01/14/87 550-01 07/04/87 550-02 09/04/87 550-03 09/04/87
PARAMETER	UNIT OF MEASURE	VALUE + / - CHICK RIGITATY	PARAMETER VALUE + / - UNICE PEATURY	TOTAL TERESTAL	FORMETER VALIETY - UNCERTAINTY	PARAMETER PARAMETER VALUE */ - UNCERTAINTY
TIN	MG/L	(0.005	500.0 >	(0.003	(0.003	(0.003
TOTAL SOL 195		303.	276.	374.	379.	374.
HUNNITH		0.0010	(0,0003	5,0042	6.0016	0.0042
UNMADIUM	MG/I	(9.2	10.00 }	0.01	10.00	0.01
71MC	HG/I	0.007	500.0	(0.005	(0.005	500.0)

SUBFACE BATER GRANTITY BATA BY LINCATION STITE: SHIPEOCK 93/47/87 TO 04/22/89

TER UNIT OF PARMETER VALUE / - UNIT OF VALUE 124.										A STATE OF THE PARTY OF	-	-	
HEAL CACKED 124. 147.	PARAMETER	UNIT OF MEASURE	5	PARAMETER A. UE + / - URICERTAINTY	5		YIY	VALUE 3/ UBICE	RIATETY	VALUE + / - UNC	FRIAINIY	VALUE . / - UM	TRIAIN
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HEAL C 0.007 C 0.003 C 0.004	HIMIM	4 4		0.05		90.0				1 0.1		.00.1	
March 0.007 0.003 0.003 0.004 0.00	DWITTE	M6/L	*	0.0	~	1.0		1.0		0.3		0.00	
March	IMUNA	MGAL		0.007		0.003		(0.003		600.00		0.00	
	RSFNIC	MGAL		6.003		6.002		0.02		10.0			
	HII.	MG/L		0.03		0.00		1.0		0.1			
High Color	WILL I'M	MG/L								10.01			
High Color	N	MG/1		0.05		90.0				1.0			
High Condition	STDE	MG/I	*	0.4	*	0.1				1.0 %		0.0	
High Color	41184	MG/I		0.005	*	0.005		100.00 3		100.00		00.00	
High	TITLE	MEA		84.8		64.4		67.76		27.0		157.	
High Color	10 1 OF	MG/1		1.87		11.8		46.		7.4		6.1	
March Color Colo	MILLIM	MG/1		0.01	+	0.01		0.03		10.01		10.01	
MATE HEALT (50.) FINAL (0.01) (50.) FINAL (0.02) (0.04) (60.) FINAL (0.02) (0.04) (60.) FINAL (0.02) (0.04) (60.) FINAL (0.02) (0.04) (0.04) (0.04) FINAL (0.02) (0.04) (0.04) (0.04) FINAL (0.02) (0.04) (0.04) (0.04) FINAL (0.02) (0.04) (0.04) (0.04) FINAL (0.02) (0.04) (0.04) (0.04) FINAL (0.04) (0.04) (0.04) (0.04) (0.04) FINAL (0.04) (0.04) (0.04) (0.04) FINAL (0.04) (0.04) (0.04) (0.04) FINAL (0.04) (0.04) (0.04) (0.0	M T	MG/I	-	0.01	*	0.01		\$ 0.05		0.02		60.03	
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High	FR	MG/L	~	0.0	,	0.01		20.02		20.02		20.00	
Fig. 10 Color Co	TOF	MG/L								10.01		0.01	
FINAL PETAL 0.0 2.2 1.4 3.2 4.0 3.6 3.4 5.2 3.4 5.2 3.4 5.2 5.4 5.2 3.4 5.2 5.4 5.4 5.4 5.4 5.4 5.4 5.4 5.4 5.4 5.4	RIDE	MG/1				0.25		0.3		6.9		0.0	
Fig. 1	S AI PHA	-				4.4	.7	4.6	3.6	3.3	7.7	3.6	
HEAL	S BETA	_				7.5	6.	4.4	1.8	3.0	1.3		
High Color		MG/L	~	0.01	~	0.01		0.03		0.03		10.0	
		MG/L	+	0.01	*	0.01		20.05		0.01		8 82	
The color	ESTUM	M6/L		42.2		42.7		42.54		0.04		0.01	
High High Colored	AME SE	MG/L		20.0		20.0		COOP A		0 0000		0.000	92
HEAL	THY	MGAL		20005		0.0003		20000		0.01		4 0.01	
HEAL	HIDE MIN	m6/L		0.03		0.0				40.04		40.04	
No.	1	M6/L		0.01	14	0.0		7.4		1.7		1.7	
Note	ATE	TIS/L				. 0				+		1	
Sept	A MIN 2	#C/I						0.1		4			
FULL 1.1 0.6 0.7 1.0 8.31 8.31 8.31 8.31 8.31 8.31 8.31 8.31	FARREN	MGAI		34.2		37.9				25.3		26.0	
Sign	40	1/134				0.7	0			0.0	9.6	0.7	
TE PGA (0.1 0.4 0.4 0.4 0.3 0.4 0.3 0.4 0.3 0.4 0.3 0.4 0.3 0.4 0.3 0.4 0.3 0.4 0.3 0.4 0.3 0.4 0.3 0.4 0.3 0.4 0.3 0.4 0.3 0.2 0.2 0.3 0.4 0.3 0.4 0.3 0.4 0.0 0.7 0.0 0.7 0.0 0.7 0.0 0.7 0.0 0.7 0.0 0.7 0.0 0.7 0.0 0.4 0.0 0.4 0.0 0.4 0.0 0.4 0.4 0.4		105				8.59		E9.83		8.34		6.31	
FCIAL 0.0 0.4 0.4 0.5 7.5 1.6 1.6 1.6 1.6 1.6 1.6 1.6 1.6 1.6 1.6	PHATE	W6/L	+	0.4	*	1.0		1.0)		0.1			
H HG/L 1.89 0.2 0.0 0.1 0.3 0.2 0.0 0.7 0.2 0.0 0.7 0.0	40	1/134				0.4 0.	5.			0.3	0.0	6.3	
PCIAL 0.4 0.2 0.0 0.4 0.2 0.7 0.0 0.7 0.2 PCIAL 0.00 0.7 0.00 0.7 0.00 PCIAL 0.00 0.7 0.00 0.7 0.00 PCIAL 0.00 0.00 0.7 0.00 0.00 PCIAL 0.00 0.00 0.00 0.00 0.00 PCIAL 0.00 0.00 0.00 0.00 0.00 0.00 PCIAL 0.00 0.00 0.00 0.00 0.00 0.00 PCIAL 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.	SSIII	M6/L				2.44		2.5	1	4.6		1.0	
FCIAL 0.00 1.1 0.03 1.2 0.2 0.7 0.005 1.1 0.005 1.1 0.005 1.2 0.00	26	PCIAL					*	0.3	0.2				
MSAL 0.002 0.003 0.017 7.7	28	PCIAL .					2	0.2	0-7	0.0	1.0	2000	
HGAL 8.34 3.26 (0.04	MILLE	M6/1.				6.003		0.019		7 7		7.	
HGAL 31.7 36.8 46.9 72.0 6.5 HGAL BALA 46.9 72.0 6.5 6.9 6.5 6.4 6.3 6.4 6.9 6.3 6.4 6.9 6.3	CA	MGAL		8.34		97*2						1000	
M MGAL 34.7 36.8 6.9 6.5 6.9 6.5 6.9 6.5 6.9 6.5 6.9 6.5 6.5 6.4 6.3 6.4 6.9 6.3 6.4 6.9 6.3	FR	1/94						10.01		20.0		6.04	
H HGAL 0.850 0.857 724, 78., 78., 78., 78., 78., 78., 78., 78.	HIL	MGAL		31.7		36.35		40.7		2.0		4.0	
HGAL (141.) 150.1 (5.	TRUNTTUR	MG/L		0.850		0.855		200		68		97.	
TUBLE C - DEGREE 72.5 72.5 0.4 6.3 0.4 6.9 0.3	ATE	M6/1.		141.	*	130.				4 0 4		1.0)	
Private 0.0 0.3 0.0 0.4 6.3 0.4 6.9	1Dt	TISA.	-	20.0		25.66		67.4		15.		45.	
	T HALLINE	0017					· ·	6.3	0.4	9 4	0.3	. 0	0.

STREET MATER BRIGHTY DATA BY LOCATION STREE SHIPPINGS 03/47/67 TO 04/22/69

PARAHETER	UNIT DE	550-04 07/06/87 PARAMETER VALUE-/-URICEPTATHITY	PARAMETER VALUE - / - INSTELLATIVITY	SSO 01 40/07/38 FARANTITR VALUE -/ THESFIAINIY	PARAMETER PARAMETER PARAMETER 11Y UALUE +/- UNCERTAINTY UALUE +/- UNCERTAINTY	PARAMETER PARAME
TIN TOTAL SOLIDS URANTUM VANADIUM ZINC	3 167 3 167 167 167 167	384. 0.0010 0.001		507.	0.0043 0.0043 0.02 0.005	287. 0.0014 0.02 (0.005

SURFACE WATER QUALITY DATA BY LOCATION STIE: SHEPBOCK 63/17/87 TO 04/22/89

TY	PARAMETER	PAPAMENER	PARAMETER	FARAMETER	PARAMETER
THITY MGAL CAEGGS TO THE MGAL CA	T ORCER INTERES	Via St 17 4K. F.F. val.	Saith 1/ (Ball Klaimir	Value 1/- unite Ribinity	UALUE +/ - UMCERIAINTY
NEW MG/L NEW MG/L NEW MG/L NEW MG/L NEW MG/L NEW MG/L NEW	5.	+05.	+0.5	123	90
TOTAL TOTA	0.4	(0.1	1.0	0.2	0.13
Mark	0.3	0.2	1.0)	6.6	. 0
10	0.003	(0.063	(0.003	0.008	0.048
M	0.01	10.01	(0.01	0.004	0000
LIUM MG/L C C C C C C C C C	0.1	1.0)	(0.1	0.1	90.0
MGAL C C C C C C C C C	10.01	10.00)	(0.01		3
10 10 10 10 10 10 10 10	0.1	0.1	1.0)	0.10	0.02
UN	0.4	1.0	1.0)		
TOPE MG/L S TOPE MG/L S S S S S S S S S	0.004	(0.001	0.001	100.00)	0.004
TOPE MG/L	50.3	45.4	49.6	5.04	39.8
TINH MGAL T. MGAL T. MGAL ETANCE UNHOACH DE 346AL TOF MGAL STUM MGAL STUM MGAL NO3 MGAL TE MGAL O PCIAL O PCIAL STUM MGAL TE MGAL O PCIAL TE MGAL O PCIAL TE MGAL O PCIAL TE MGAL TE MGAL O PCIAL TH MGAL STUM MGAL TH MGAL O PCIAL STUM MGAL O PCIAL O PCIAL STUM MGAL O PCIAL O PCIAL STUM MGAL O PCIAL O PCIAL	1.9	4.7	4.7	6.4	***
TEAME MEAL	0.01	0.01	10.01	(0.01	0.02
TOPE UMBOACH 27 R MEAL C	0.05	\$ 0.65	0.05	\$ 6.05	(0.01
DE MEAL AMPHA PCIAL BETA PCIAL STUTE MEAL NOT MEAL	0-	270.	270.	330.	190-
STUTE MEAL ANTENNA PCIAL STUTE MEAL STUTE MEAL NOS MEAL O SU MATE O SU	0.05	(0.02	(0.02	0.04	(0.01
AMENIA PELIA STUTE MEAL NOT MEAL NOT MEAL NOT MEAL NOT MEAL CARSON MEAL CARSON MEAL O SU NOT MEAL O SU O SU	0.00	(0.01	10.0		
STUTE MEAL (STUTE MEAL (MESE MESE MEAL (MESE MESE MESE MESE MESE MESE MESE MES		6.2		0.24	0.49
STUIN MGAL NESE MGAL NESE MGAL NESE MGAL I E MGAL CARSON MGAL CARSON MGAL O PCIAL STUIN MGAL STUIN MGAL A MGAL STUIN MGAL STUIN MGAL TE MGAL STUIN MGAL STUIN MGAL STUIN MGAL STUIN MGAL TE MGAL STUIN MGAL STUIN MGAL TE MGAL STUIN MGAL STUIN MGAL TE MGAL STUIN MGAL STUIN MGAL TE MGAL STUIN MGAL TE MGAL STUIN MGAL TE MGAL STUIN MGAL STUIN MGAL TE MGAL STUIN MGAL TE MGAL STUIN MGAL S	1.8	5.5 2.3	2.4 2.0		
STUTE MGAL NESE MGAL RY RY MGAL L MGAL L MGAL CARSON MGAL CARSON MGAL O SU NOT TE MGAL O SU NOT NOT MGAL SU MATE MGAL SU MGAL MGAL SU MGAL SU MGAL SU MGAL SU MGAL SU MGAL SU MGAL		0.1			1
STUTE MGAL RY RY RY MGAL C L MGAL C CARSON MGAL CARSON MGAL CARSON MGAL S MATE MGAL S MGAL C MGAL MGAL C MGAL MGAL C MGA	0.01	6 6 6 6	,0.0	0.03	0.05
NESE NEAL	8.71	200	0.30	0.001	0.02
RY M6AL (1. M6A	0.01	0.01	0.01	0.02	0.63
DENUM M6.1. (TE M6.1. (TE M6.1. (TO NO3 M6.1. (TO NO3 M6.1. (TO NO1 M6.1. (0.0002	(0.0002	4 0.0002		30.0
TE M674 TE M674 TO M03 M674 CARSON M674 O SU N674 O SU N674 O SU N674 O PC174 STUM M674 A M674 A M674 A M674 A M674 C M67	0.04	10.01	10.00 /	6 0.4	10.01
TE M6AL NO3 M6AL CARSON M6AL O SU NOT PCIAL SUM M6AL SUM M6AL SUM M6AL TUM M6AL R M6AL SUM M6AL	0.04	4 0.04	6 0.44	0.03	0.01
NO3 MG/L NO3 MG/L NO3 MG/L NO3 MG/L NO3	1.8	1.5	1.8	0.1	0.8
CARSON MSAL O SU NATE MSAL SUM MSAL STUM MSAL STUM MSAL A MSAL R MSAL TTUM MSAL R MSA				6.4	(0.1
0 PCIAL SU MGAL 0 PCIAL 0 PCIA	4 4	27.0			
TE 1857. (187	0.0	* 0			
TE M6AL MM M6AL PCTAL PCTAL PCTAL M6AL M6A		8.34	8.3.	8.1	0.0
## PCIAL PCI	0.1	(0.1	6.0	0.30	0.03
## #674 PCT/L PCT/L · C #674 · C #674 · C #674 · C #674 · C #674 · C #674 · C	9.0 0.4	0.0 0.4	0.0	0.0	40
FCIAL FCIAL FOR FCIAL FOR FCIAL FCIA	1.4				
1674 (1684 (0.0
T T5/L (0.0	0.5 0.8	0.4 0.3	0.0 0.0	
M6/1. (M6/1.	0.005	500.0	\$ 0.005	2	4 0.004
M MSA. C. PERE. C. PE	7		7.	8.9	10.2
OH MG/L MG/L MG/L MG/L MG/L MG/L MG/L MG/L	0.01	10.01	10.01		
MS7. CHREE	0.4	7.74	19.6	41.6	16.8
TURE C STOREE PCL C		7 - E	1. o	97.0	0.48
C PERE	0.4	1.0			74.
1 134	5.	14.		6	42.0
	0.0 0.3	0.0	6.0 6.2	000	0.27
HINTI TITM MEA (0.0	0.01	10.01	0.01		0.0

SHRAFE WATER GHALITY DATA BY LOCATION STIE: SHIPROCK 03/17/87 TO 04/22/89

PARCHETER PARAMETER PARAMETER OR WEST ABOUT VALUE - CHICKETAINTY U	PARAMETER VALUE - AMESETATORY
AIMIY	PARAMETER E+/ UNCERT

SURFACE UATER ORGATITY DATA BY LOCATION STIFE: SHEPBOCK 03/17/87 TO 64/22/89

PARAMETER	UNIT OF HEASURE	VA	PARAMETER VALUE+/-UNCEPTAIRIY	11.	PARAMETER VALUE A CHREET STRIFT	4114	VALUE + / - URLER TATREY	RETAIRIY	VA	PARAMETER VALUE + 7- UNCERTAINTY		PARAMETER VALUE+7-UNCTRIAINTY	RITAINT
ALKALINITY	MG/L CACOS		423.		124.		20%	-	1	146.	1	+0+	
AL UMINIM	H67.		6.08				1.0)			0.2		90.0	
DELI MILITA	Mi/L	-	0.4		1.0		0.3		,	0.1	~	0.1	
ANGELLEGIA	M6/L		0.003		0.693		800.0		*	0.003		120.0	
GREENIC	M6/1		0.093		40.0		0.63			0.004	,	0.001	
SOUTH IN	MG/L		60.0		1.0		1.0		,	0.4		90.0	
BERYLL IUM	167						0.01						
BURUM	M6/L		9-02				0.3			90.08		0.02	
BROWIDE	M6/1		0.1				0.1						
CAUMIUM	M6/L	_	0.005		0.001		0.002		,	0.001		900.0	
CON OR THE	M67L		64.3		76.4		433.			47.2		40.4	
CHI OF IDE	1111/1		11.8		13.		74.			3.9		4.0	
CODAL T	10/1		0.01		0.03		0.01			0.01		0.02	
COMPANDET AND			270		20.03		50-0		,	0.03		10 3	
The Pictor		,	0 01		370.		4,000			430.		185.	
YAMINE	MG/1				2020		70.0			0.01		0.01	
FI UOR IDE	MG/I		0.24		6.0		1.0			0 24		0 40	
SRUSS ALPHA				0		*	200	7.5				01.0	
GROSS BETA			4.6 3.3	3		1.8	53.	48.					
TRON	MG/L				0.03		0.45			0.05		0.03	
FAD	MG/L	~	0.03		10.0		0.05		-	0.001		0.02	
AANCANE STUM	M67L		12.5		13.1		178.			12.7		7.64	
HEROTOPE SE	7/4		20.0		-		0.36			0.02	-	0.01	
MIN YEDENIM	MG/I		70000		2000.0		20002		,				
HEKEI	HG/1		0.01		0.01		0.00			0.0		0.00	
MITRATE	MG/L		0.4		2.4		24.		,			4.0	
MITRITE	M6/L	~	0.1				4			0.1	,	0.4	
FIO7 8 NO3					6.1								
ORGE. CARRON							5.1.5			30.7		26.7	
FB 210	PEIA		0.9	**			9.8	0.7		0.0		0.5	1.2
PHYSPHATE	MC /1	,	00		6		6.10			0.74		8.22	
240	DE171			,	1-0		0.1					0.30	
POTASSTIM	MEA		1.94		2.7			0.4		9.0		0.0	0.5
RA-226	PE1/1		0.0				7						
RA-228	PCIAL				0.0	7.0	0.0	10		2.0		0.0	
SUFFIUM	MG/L		13				6.038		2		,	0 004	•
STLICA	MGAL		7.94				4.			8.9		***	
STLUER	HC71				10.01		10.0						
Suprim	M5/1		42.7		44.7		1040.			34.1		17.2	
STRUCTION	M6/1		0.845		5.0		4.5			0.74		0.47	
CHETTE	ME /		16.3.		17.72		1000			125.		67.	
THE RATHER			21.2		14.6		32.1					42.0	
н 239	FET.		0.0	77		20						0.71	
						-		13 13		000		. 0	2 0

SINCAST MATTE BEN 1117 DATA BY LUCATING SINCE SHERRICK 03/17/87 10 04/25/89

PARAMETER	UNIT OF MEASURE	PARAMETER VALUE+7-UNCERTALUTY	PARTIES THE PARTY SALIE	Pabain ite 17 Uniteratury Value 27 uniteratury	ABOURTER PARAMETER PARAMETER PARAMETER	CROWN IT PARAMETER PARAMET
1118 H 10141 S01 105 H 1016/2010 H 1016/2010 H 2110 H	857 857 857 857 857	997. 9.0015 0.001 0.005	421. 9,9023 0,01		6 0.005 342. 6.0042 6.0042	(0.005 207. (6.0003

SHIP OF USITE OF OF THE DATA BY LOCATION STIE: SHIPPOCK 03/47/87 TO 04/22/09

			-		-		1000		The same	西國原籍 医看者其正正 年度等 北京日本		The state of the s	10000000
	PARAMETER	UNIT OF MEASURE	UA	PARAMETER LUE+7-UNCERTAINTY	un	PAPAMETE LIE + Z - URIT PEATUTY	Panahi Ti	FP	20	PARAMETER N UF + 7 - UNCERTAINTY		PARAMETE LUE+7-UNCER	RATMIY
HEAL 0.107 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.10 0.10 0.14 0.10 0.10 0.10 0.14 0.10 0.10 0.10 0.14 0.10	ALKAL INTTY	A		129.		. 64.	59.			402.	-	86	
MEAL	AL UMTHUM			0.07			1.0)		40	0.4		0.05	
HEAL 0.002 0.003 0.003 0.000	AMMONTUM	mG/L	~	0.1	~	0.1	0.3		~	0.1	*	0.1	
High Color	ANTIMONY	MGAL		0.004	~	0.003	(0.003		-	0.003		0.020	
HEAL	SENIC	MGAL		0.002		0.01	10.0			0.002		0.001	
The mist	MI.Z.	MGAL		0.07	,	0.1	1.0)			0.2		0.05	
Fig. 1 Co. C	RYLLIUM	HG/L					10.01						
He Hi Hi Hi Hi Hi Hi Hi	BURUM	MG/L		0.05			1.0)			0.40		20.0	
High High Good	BROWLDE	#5/L	~	0.1			(0.1						
Unit High Gold	DRIUM	MG/L	~	0.005	+	0.001	100.00)		*	0.001		900.0	
Interference 1.0 1	LCTUM	MG/L		62.6		71.2	52.5			45.9		39.9	
The part Color C	ORIDE	MG/L		10.6		13.	6.1			2.0		3.8	
Caracte Children Caracte Car	ROMIUM	MG/L		0.01		0.03	10.01			0.01		0.02	
No.	The same	F15/L		0.01	-	50-0	50.0		~	0.05	~	0.04	
Fig. Fig. Co. Co	MULL SANCE	UTHEN/CH	,	338.		410.	225.			270.		180.	
No.	ANTON	H5/L	,	0.01	,	20.0	20.02			0.04	•	0.01	
SETA Co.	HOO TOL	TC /		71.		*	10.01						
STIME STIM	DES ALPHA	PF1/1					9.9	000		0.21		0.49	
High	ATTA CONTA	PET/I					0.4						
Heart Court Cour	140	MG/L	~				(0.03	0.,		0.05		0.02	
STRING No. 12.0 12.7 12.0 12.4 12.4 12.4 12.0 12.4	de de	MG/1	*	0.01	1	0.01	10.01		*	0.000		0.05	
Fig. 12 Fig. 1 Co.03 Co.05 C	GNESTUM	MG/L		12.0		12.7	9.20			12.4		7.45	
Heart History Colored Colore	MEANESE	MGAL		0.03			0.05			0.01		0.01	
The High Cold Col	KLUKY VDDC 2011	167L	,	9,0006		0.6602	200000						
TE HS/L C O.1 C C C C C C C C C	FKF1	HG/I		0.0		0.01	0.01		-	0.4	, ,	0.01	
TE Hist (0.1) (1.0) (0.1) (0.1) (0.1) (0.1) (0.1) (0.1) (0.1) (0.1) (0.1) (0.1) (0.1) (0.1) (0.1) (0.2)	TRATE	M6/L	~	1.0		4 4			,	70.0			
HOTE HIGH	TRITE	M6/L	•	0.1						0.4	,	0.0	
CARBGH MGAL O FCLIAL O F	2 8 MB3	MG/L			~	1.0				1			
PCIAL PCIA	G. CARBON	MG/L					21.0					59.4	
ATE HGAL (0.15 (0.17 (0.25 0.26 0.26 0.27 (0.26 0.27 0.26 0.20 0.27 0.26 0.27 0.26 0.20 0.27 0.26 0.20 0.27 0.26 0.20 0.27 0.26 0.20 0.27 0.20 0.20 0.27 0.20 0.27 0.20 0.20	-240	PCIAL					0.0	9.0				0.2	1.0
FETAL 1.72 2.2 1.6 0.10 0.4 0.7 1.9 FETAL 1.72 2.2 0.1 1.6 0.0 0.2 1.9 FETAL 0.002 0.013 0.0 0.0 0.0 0.0 FETAL 0.002 0.0043 0.006 0.006 1.2 0.0 FETAL 0.002 0.004 0.006 1.2 0.0 FETAL 0.004 0.004 0.004 0.004 FETAL 0.004 0.004 0.004 0.004 FETAL 0.004 0.004 0.004 FETAL 0.004 0.004 0.004 FETAL 0.004 0.004 0.004 FETAL 0.005 0.004 0.004 FETAL 0.005 0.004 0.004 FETAL 0.006 0.006 0.004 FETAL 0.006 0.006 0.004 FETAL 0.006 0.006 FETAL 0.006 0.006 FETAL 0.007 0.004 FETAL 0.006 0.006 FETAL 0.006 FETAL 0.006 FETAL 0.006 FETAL 0.006 0.006 FETAL	DSPHATE	96 MG/4	,	0.53		1.73	2.0			8.34		8.24	
10	-240	PETA						0 0				0.50	, 0
PCIAL - 0.00 0.1 0.1 0.1 0.0 0.2 0.0 0.0 0.2 0.0 0.0 0.1 0.0 0.0 0.2 0.0 0.0 0.0 0.0 0.0 0.0 0.0	TASSIEM	M6/L		4.72		2.2	1.6						0.0
PCL/L HG/L HG/L D-002 0.043 0.043 0.09 0.09 0.09 HG/L HG/L 7.25 0.09 HG/L HG/L HG/L HG/L HG/L HG/L HG/L HG/L	-226	PCIAL										0.0	0.4
H6AL 0.002 0.003 0.004 0.004	-228	PC1/L					0.0	6.7				0.0	5.4
	ENTON	MGAL		0.002		0.013	50070		~		*	0.001	
HEAT 39.2 44.1 20.4 29.9 0.73 HEAT 6.0 0.3 0.8 0.8 0.8 0.8	LILA.	M67L		7.25			7.			8.8		10.8	
UN MEAL 0.870 0.73 0.73 0.8 0.3 0.8 0.8 0.8 0.8 0.8 0.8 0.8 0.8 0.8 0.8	TOTAL STREET	TIP/T			,	0.01	10.0						
HIGH (50. 174. 174. 174. 174. 174. 174. 174. 174	BONTINE	MG/L		0.070		41.1	20.4			29.9		16.4	
HGA (0.1 C - DEGREE 10.1 PCL/A 0.3 0.0 0.3 0.8	SHITATE	MG/1		150.		42.6	6.5			424		70.43	
C - DEGREE 15.1 15.7 15.7 15.7 15. 15.0 15.0 15.0 15.0 15.0 15.0 15.0	SHEIDE		*	0.1			1.0						
PUL/1 0.0 0.3 0.3 0.8	MPFRATURE	C - DEGREE		15.1			13.			7.		40.0	
	230	PC174					0.0	6.3				0.1	9.0

SHEAT UALLE SHIPEOUR STATE OF LOCATION STATE SHIPEOUR 03/17/87 TO 04/22/89

PARAMETER MEAS	UNIT OF MEASURE	PARAMETER VALUE +7-URICERTAINTY	PAPARETER VALUE / BETERAIRTY	FARANTITR VALUE - URSTRIAINTY	PARAMETER PARAME	PARAMETER VALUE+/-UNICERIAINIY
HGAL S HGAL		, in B	***	0.005	(0.005	(0.005
URAHIUM MG/L ZINC MG/L		0.0012	0.0020	0.0011	378. 0.0005 0.0005	214.

SHREACE BATTR DSALITY DATA BY LOCATION SITE: SHEPROCK 037.17/87 18 04.27/89

SE S			-	553-01 04/20/3/	-	333 91 19/91/88	10-835	04/04/30		224-01 03/16/87	87	S	554-01	05/46/87
Column C	PARCMETER	HEASURE	n'a	PARAMETER ALUE+/-UNCERTAINTY	nes.	PARAMETER BE+7-UPCFRTAINTY	PARAM VGLUE + / - II	ETER MERTATHIY	2	PARAMETER	MTY	עמונו	PARAMET	ER
Think the part Thin	ALKAL INITY	6-15		136.	1	118	446		k		1			-
The column The	ALUMINUM			0.40			1.0)			113.			98.	
THINK 150.1 0.003 0.004 0.00	MONTHIM	MSAL	~	0.1	,	0.1	+ 0 >		,			,	00.0	
The color of the	TIMONY	MG/L	~	0.003	,	0.003	0.00		. ~	0 003				
The color	SENIC	M6/L		0.002		0.01	,000			0 000		•	0.010	
No.	RIUM	MG/L		0.08	*	0.1	. 0			0.3			0.001	
The color	PYLLTUM	MG/L					0.00			7.0			0.00	
Marine Mile	101	MG/L		90.0			0.0			0 04				
Color Colo	MIDE	1/94	~	0.1			1 0 3			00.0			10.0	
Color Colo	MILIM	MG/L	~	0.605	~	0.001	00.00		•	0 00 0			n 000	
High	CTUM	MG/L		63.0		70.1	58.8			46.7			40.00	
High High Color	ORTOE	HG/L		11.8		13.	10.			2.0			2.0	
The color of the	E LINE	M6/L	~	0.01		0.03	10.0		,	0.04			0 00	
Part Color	T IV	MG/L	-	0.01	*	0.05	0.05			0 05		,	20.0	
High 0.01 0.02 0.03 0.04 0.05 0.04 0.04 0.04 0.04 0.04 0.05 0.05 0.04 0.05 0.05 0.04 0.05	DUCTANCE	M3/0HM0		356.		395.	270.			250.			IRC	
HAN PETAL 19.25 3.4 0.3 1.0 0.3 1.0 0.22 0.49 HEAL 19.2 4. 6.55 1.7 1.0 2.3 0.23 0.04 HEAL 19.2 4. 6.03 1.7 1.0 2.4 1.0 0.02 HEAL 19.2 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0	FER.	MS/L	_	10.0	,	0.02	(0.02		~	0.01		-	0.04	
He He He He He He He He	IN THE	10/L					(0.01			*			1	
State Stat	DE ALBUA	Mb/L prrv					0.3			0.22			6. 49	
High Color	CC DETA	PC171					1.0	2.3						
The color of the	W DEIN	MEZI		1.3			3.8							
HEAL 12.2 13.7 12.9 10.00	0	M6/L		0.01		50.0	0.04			0.03			0.04	
High 0.002 0.004 0.004 0.007 0.004	MESTUM	MGAL		42.2		13.7	45 0		-	100.00			0.02	
High 0.0002 0.0002 0.0002 0.0004 0.01	GAMESE	MG/L		0.02			0.0			0 02			0.00	
Mist Court	CURY	M6/L	,	0.0002		0.0002	00.00	12		-				
HEAL	TEDENGE	167L		9.04	,	0.01	0.00		~	0.1		,	0.04	
HEAL	BATE	11671		0.04			0.04			0.02		*	0.01	
STATE STAT	BITE	110/C				1.4	2.1		~	0.4			8.0	
Color Colo	E MUS	MG/L		0.1					~	0.1			0.4	
FCIAL Su 8.68 FC	FARBUN	MG/I				1.0							1	
SU 8.68 7.74 8.43 9.7 6.2 6.3 6.31 6.31 6.31 6.31 6.31 6.31 6.31	210	PCIAL					50.4						25.5	
HGAL		ns		8-68		7.74	0 43	1.0			7-		4.4	1.2
2.10 PCIAL 1.95 2.7 0.5 0.6 0.3 0.0 1.0 0.5 2.46 0.3 0.0 1.0 0.2 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	SPHATE	#67L	~	0.1		6.1	6 0 3			0.00			8.22	
228 PEI/I 228 PEI/I 228 PEI/I 228 PEI/I 229 PEI/I 229 PEI/I 220 0.0 0.2 0.0 0.0 0.0 0.0 0.0 0.0 0.0	210	PCIA					5.0				2			4
226 PCIAL 228 PCIAL 228 PCIAL 6.0 6.1 6.2 6.0 6.0 6.2 6.0 6.0 6.2 6.0 6.0 6.2 6.0 6.0 6.2 6.0 6.0 6.2 6.0 6.0 6.2 6.0 6.0 6.2 6.0 6.0 6.2 6.0 6.0 6.2 6.0 6.0 6.2 6.0 6.0 6.2 6.0 6.0 6.2 6.0	ASSIUM	MG/L		1.95		6.2	2.44				0,		. 70	0.0
FENTURE E. DETREE C. DETRE	226	PCIAL		1			0				2		0 0	0
	200	PCIA.					0.0				6		0.0	0
HEAT 42.7 (0.04 (0.04 HEAT 72.2 10.8 HEAT 42.7 46.7 (0.04 HEAT 79.3 19.3 HEAT 10.46 H	TCA	MS/L		0.003		0.013	(6.00		~				0.004	0.0
HEAT 42.7 (6.04 (9.04 HEAT 42.7 46.7 46.7 (9.04 HEAT 42.7 46.7 (9.04 HEAT 42.7 (9.04 H	11111	TIB/L		7.36			8.			7.2			10.8	
HIGH 6.87 0.46 0.74 0.46 HIGH 6.3 0.4 0.77 0.46 HIGH 6.3 0.46 17.5 17.5 17.5 17.5 17.5 17.5 17.5 17.5	THE PARTY	MG/L		* **	,	0.01	10.01							
M6A 454. 474. 71. 6.4 6.4 6.4 6.4 6.4 6.4 6.4 6.4 6.4 6.	CHETTIM	ME/8		45.7		46.7	32.4			79.7			19.8	
TURE C - DEGREE 45.7 43.5 41. 8. 9.0 0.3 0.4 0.7 0.0	MEATE	MG/I		979-0		4.00	9.0			0.74			0.46	
510RE C - DECRET 15.7 13.5 11.5 11.5 11.5 11.5 11.5 11.5 11.5	FIRE	MG/A	~	6.4			.01			174.			74.	
PC1/1 0.0 0.2 0.0 0.3 0.4 0.7 0.0	TERATURE	C - DEGREE		45.7		13.5	***							
	230	PCIA					0.0	0.3		0.4			0.0	4

SURFACE DATER DUALITY DATA BY LUCATION SITE: SHIPPINCK 03/17/87 TO 04/22/89

PARAMETER	UNIT OF MEASURE	PARAMETER VALUE+7-UNCERTAINTY VAI	PARAMETER PARAMETER PARAMETER PARAMETER PARAMETER PARAMETER VALUE+/-UNCERTAINTY VALUE+/-UNCERTAINTY	PARAMETER VALUE + / - UNCERTAINTY	PARAMETER VALUE+/-UNCERTAINTY VALUE+/-UNCERTAINTY	PARAMETER VALUE+/-UNCERTAINTY
IN NI				(0.005	(0.005	(0.005
WARTING		399.	414.	330.	305.	229.
JOHNO TUM	MGAL	0.04	0.01	6.0015	0.0010	0.0003
THE	MG/L	\$00.00 >	0.008	0.017	0.005	0.065

SHEACE DATER OHALITY BATA BY LOCATION STHE: SHIPPOCK 03/11/67 TO 04/22/89

Hard Control				A STATE OF THE PARTY OF THE PAR	-	· · · · · · · · · · · · · · · · · · ·	一度 中山田田		京 一年末 一日 十十二	日本 東京	· · · · · · · · · · · · · · · · · · ·		· · · · · · · · · · · · · · · · · · ·	Same of Street, or
Hart Carrier Co. C	PARAMETER	UPIT OF MEASURE	NA.	PARAMI TER LUE+/-UNCERTAINT		VALUE + 7 - UNITER TAI	THIL	PARAMI VALUE+7-UR	TERTAIMTY	No.	N DE + / - GREERTAINT		PARAMETE	RAINTY
1874 0.0094 0.049 0.04	KAL INITY	4 10 24		123.		114.		114.			114.		-114.	
High Color	TOW I WOULD	716/L		90.08										
March Control Contro	HUMAN	m6/L		0.1		0.1		0.1			0.1		0.1	
No.	LIMONY	M6/A		0.004	,	0.003		00.00		,	0.003	•	0.003	
100 100	SENIC	MGAL		0.003		0.01		10.0			0.01		0.01	
HEAT 0.05 0.001	RIUM	MGAL		60.0	-	0.1		0.1		,	0.4	•	0.1	
100 100	RYLLIUM	MG/L		: .									,	
High Color	RUM	#6/L		0.36										
High Colors Color Colo	DMIDE	MG/L		. 0									•	
High	DMINH	M6/L	~	500.0	~	0.001		00.00		,	6.001	~	0.001	
High Color	CIUM	MG/L		63.0		69.1		69.4			1.69		0.69	
HEAT	ORIDE	MGAL		13.0		13.		13.			13.		13.	
High Color	NO HOLD	MGAL	~	9,04		0.03		0.03			0.03		0.03	
High Color	3AL T	MG/L	~	0.01	*	0.05		50.0 >		.,	0.05	~	0.05	
High Color	POUCTANCE	UMH0/CM		470.		425.		425.			425.		425.	
March 0.75 0.3 0.3 0.3 3.5 3.4 2.9 7.7 March 0.8 2.9 0.3 4.6 3.0 3.5 4.8	PER	H6/L	-	0.01	*	20.0		0.05		,	20.0	~	0.05	
PETAL 0.85 2.9 4.0 3.0 3.5 3.4 4.5 7.4 4.6 4.8 4.5 7.4 4.6 4.8 4.5 7.4 4.6 4.8 4.5 7.4 4.6 4.8 4.5 7.4 4.6 4.8 4.5 7.4 4.6 4.8 4.5 7.4 4.6 4.8 4.5 7.4 4.6 7.4 4.8 4.5 7.6 7	- TOUR	M6/L		-									1	
March S.7 S.	JUN 101	116/L						0.3					0.3	
High Cold	HCC RETA	PETA					3-0	8.0	3.5				1.0	3.6
High Court	IN DELM	H6/1	,				0-1	0 00	1.0	,		•	8.9	1.7
High	C	MG/1		0.01		0.00		000			50.0		0.00	
High 0.00	SWESTIN	MG/I		11.7		12.4		12.2			43.0		*2 *	
High Country	IGAMESE	MGAL		0.02										
High (0.04)	TEURY	MG/L	~	0.0002	*	0.0002		00000	2	*	0.0002	*	0.0002	
HIGH (0.01) HIGH (0.1) HIGH (0.0) HIGH (0.1) HIGH	YBDENUM	1/94	~	0.01	~	0.01		10.0.			0.04	~	0.01	
No. 1	KFL	M6/1		0.01										
High	RAIL	ms/L		0.1	~	1.0		0.1		*	1.0	•	4.0	
No.	IN ILE	MC /I	,	0.1									, ,	
Su	CAPRON.	MG/1		17 4		1.0		0.1		-	0.1	-	0	
E NGAL (0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14	-240	PCI/I												
H6AL Co.		StJ				7.83		7.83			7.83		7.83	
HeAL 2.06 0.46 2.3 2.5 2.9 2.8 2.9 2.8 2.9 2.8 2.9 2.8 2.9 2.8 2.9 2.8 2.9 2.8 2.9 2.8 2.9 2.8 2.9 2.8 2.9 2.8 2.9 2.8 2.9 2.8 2.9 2.8 2.9 2.8 2.9 2	SPHATE	M6/L	>	0.4		0.1		0.1			0.4	*	0.1	
MG/L 2.00 0.1 0.2 0.2 0.1 0.1 0.2 0.0 0.	210	PCIAL											1	
PCIAL 0.0 0.1 0.2 0.2 0.2 0.0 PCIAL 0.0 0.0 0.2 0.2 0.2 0.0 PCIAL 0.0 0.0 0.5 0.7 0.4 0.8 0.2 0.8 MGAL 0.0 0.0 0.0 0.0 0.0 0.0 0.0 MGAL 44.9 0.0 0.0 0.0 0.0 0.0 0.0 MGAL 44.9 0.870 0.0 0.0 0.9 0.9 0.9 MGAL 46.0 0.0 0.9 0.9 0.9 0.9 0.9 MGAL 46.0 0.0 0.3 0.5 0.0 0.9 0.9 0.9 MGAL 46.0 0.0 0.3 0.5 0.5 0.5 0.5 MGAL 0.0 0.3 0.5 0.0 0.3 0.5 0.5 MGAL 0.0 0.3 0.5 0.5 0.5 0.5 <td>IASSIUM</td> <td>m6/L</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>2.5</td> <td></td> <td></td> <td></td> <td></td> <td>2.8</td> <td></td>	IASSIUM	m6/L						2.5					2.8	
MG/1	-226	PCIAL					0.2	0.1	0.1				0.0	0.4
MG/L 0.003 0.004 0.007 0.009 0.009 MG/L 44.9 44	-228	PCIAL .					1.0	0.4					9.0	9.0
M6/1 44.9 (0.04	1Co	H6/1.		0.603		0.013		0.007			0.010		60000	
HIGH 44.9 HIGH HGA 44.9 HIGH HGA 6.870 HIGH C. DEGREE 23.0 HIGH C. D	111.0	MC /1		0.07	,									
UM NGA 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9	DITIM	MG/I		44.0		20.01		44.5			10.01		0.01	
HGAL (160. 170. 162. 173. 175. 175. 176. 176. 176. 176. 176. 176. 176. 176	ROHTTUM	MG/I		0.870		0.8		0.0					000	
MEAL C DEGREE 23.0 44.0 46.0 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5	LFATE	M67L		160.		170.		162.			(73.		175.	
1100 C - DEGREE 23.0 44.0 46.0 45. 46. 46. 46. 46. 46. 46. 46. 46. 46. 46	FIDE	MGA	~	0.1										
MIN WELL 0.0 0.3 0.5 0.5 0.6 0.5 0.5 0.5	THE RATURE	C - DEGREE						17.					.94	
	C. 1. 1118	MC /1					5.0	0.0	0.3				0.5	0.5

SUBFACE UATER QUALITY BATA BY LINCALIBN STR: SUIPROFF 03/17/87 TO 04/22/89

PARAMETER	UNIT OF MEASURE	PARAMETER VALUE+7-UNCEFTAINTY		PARAMETER PARAME	FARAMETER PARAMETER VALUE +/ UNCERTAINTY VALUE-/ TAMES	PAPANETER VALIE DMCE, TAIMITY
TIN TOTAL SOLIDS MANTUM MANTUM MANTUM TINC	167 167 167 167	(0.003 393. 0.0011 0.01 (0.005	409. 0.0023 0.01	400. 0.0023 0.01 0.005	3/0.	6.0026

SHREACE DATER BUAR ITY BATA BY LOCATION STIE: SHIPROCY 03/42/87 TO 04/22/89

Parisht Pari				日本 日日日日日日日日日日日日日日日日日日日日日日日日日日日日日日日日日日日	CHICAGOS.	京田 東西 正日 日下 下下 下 一 日 三 日 東 中 五	A STATE OF THE PARTY OF THE PAR	· · · · · · · · · · · · · · · · · · ·	Carried and	日本書書を日本 二日子中 五二年 十二日		The state of the s	
High Card 144. 150. 15	PARAMETER	HEASURE	2	PARAMETER LUE+/-UNCERTAINTY		PARAMETER MENE + 7 - URICE RIGIRLY	VAL 3E +/	THE TER THEY	ES.	PARAMETER ALUE + / - UNICERTAINTY		PARAMETER (UF+/-UNCERTAL	NTY
Mary Color	ALKAL THITY			114.		95.	150.		1	42.		124.	-
Mark Co.03 Co.04 Co.04 Co.05 Co.04 Co.05	UMINIM	MGA			**	9.4	0.1	•		9.05		0.07	
High Colored	MILE IN	MS/L	-	0.1	4	0.1	٠٠ ٥.			1.0	~	0.4	
Miles	TIMONY	MS/L	-	6.003	~	0.003	0	800		0.023	~	0.003	
Mark	SERIC	M6/L	1	0.01	~	0.01	0.0	200	,	100.0		0.003	
No. 1	RIGH	MGAL	~	0.1	*	1.0	0.			90.0		0.08	
High	RYLLIUM	M6/1			-	10.0	4						
High Court	ROM	MG/L		1	*	0.1	0.0	17		0.02		90.0	
	OMIDE	M6/L			~	0.1					~	0.1	
High	DHILL	MS/L	~	0.001	*	0.001	,00	104		0,005	*	0.005	
METALL 1.0 1	CIUM	MG/L		72.9			44.			44.7		62.0	
The color	ORIDE	MG/i.		13.		6.1	5.4			3.3		13.0	
Transfer	ROHISH	MGAL		0.03	~	0.01	1.0)	11		0.05	*	0.04	
Transcript 425, 200, 265, 495, 975, 9	BALT		~	0.05	~		0.0	75	*	0.01	*	0.01	
He Hi	MOUCTANCE			425.		200.	265.			195.		375.	
No.	PPER	MG/L	~	0.02	~	0.02	0.0	34	-	10.0	~	0.01	
No.	GMIDE	MS/L		1	-	10.0							
RETALL 4.2 3.0 2.1 1.9 .	MIRIDE					0.3	0.	22		0.49			
HE IN TAIL	USS ALPHA					2.1							5.9
STUME MISTAL Co.051 Co.052 Co.054 Co.054 Co.054 Co.054 Co.055 Co	USS BEIR	FCI/L				2.7							3.4
STUTH HIGH 12.6 6.45 17.2 7.35 7.35 HEST HIGH 12.6 6.05 0.04 0.04 0.04 HIGH HIGH 12.6 0.04 0.04 0.04 0.04 HIGH HIGH 1.0 0.04 0.04 0.04 STUTH HIGH 1.0 0.05 0.04 0.05 0.04 STUTH HIGH 1.0 0.05 0.04 0.05 0.04 STUTH HIGH 0.005 0.04 0.05 0.00 HIGH HIGH 0.005 0.04 0.05 0.00 HIGH HIGH 1.0 0.04 0.05 0.00 HIGH HIGH 1.0 0.005 0.04 0.05 HIGH HIGH 1.0 0.005 0.005 0.000 HIGH HIGH 1.0 0.005 0.005 0.000 HIGH HIGH 1.0 0.005 0.005 0.000 HIGH HIGH 1.0 0.005 0.005 0.005 HIGH HIGH 1.0 0.005 0.005 0.005 HIGH HIGH 1.0 0.005 0.005 HIGH 1.0 0.005 0.005 0.005	90	H6/1		0.01	- ~	50.00	,	14		0.03		0.01	
No.	GNESTUR	MGAL		12.6		E.45	42.			7.35	•	12.2	
New Picture	MEANESE	M67L				0.02	0.0	12		0.01		0.03	
No.	RCUEY	HG/L	,	0.0002	~	0.0002					~	0.0002	
He	YBDENDM	M67L	~	0.01	7	0.01	.0).		*	0.01		0.01	
TE MGAL	CKEL	MG/L			,	0.04	0.0	33	2	0.01	*	0.01	
THE HGAL	TRATE	MGAL	,	1.0		3.4	.0 0.			0.4	*	1.0	
MOST MG/L 1.0 24.2 33.0 26.2 1.0 CARBON MG/L	TRITE	MG/L		1			٠٠ ٥.		*	0.1	`	1.0	
CARROLD TOTAL CARROLD TOTAL CARROLD TOTAL CARROLD TOTAL CARROLD TOTAL CARROLD CARR	2 & MB3		,	0.1		, ,				, ,			
Su	9. CARRIED			•		2.4	33.						
F HSAL	-210	7.1.7.					0.						
PCIAL 2.2 4.5 6.0 6.4 6.1 6.5 6.5 6.0 6.4 6.1 6.5 6.	DEPHATE	30 MG/1		6.4		17.0	200	74		6.73	•	8.75	
H HGAL PETAL 0.0 1.1 PETAL 0.0 1.0 1.0 1.0 1.0 1.0 1.0 1.	240	PF1/1					. 0						
FEIAL 0.0 0.1 0.0 0.7 0.0 0.2 0.0 0.2 0.0 0.2 0.0 0.2 0.0 0.2 0.0 0.2 0.0 0.0	TASSIII	MG/1		2.2								***	
PCIAL 0.8 0.0 0.0 1.	-225	PEIA					. 0						
M67L 0.005 (0.005 (0.001 10.9 (0.001 10.9 (0.001 10.9 (0.001 10.9 10.9 (0.001 10.9 (0.00	228	PCI/L					0.0						
HISAL (0.01 (0.01 HS.) HISAL (0.01 (0.01 HS.) HISAL (0.01 (0.01 HS.) HISAL (0.02 (0.02 HS.) HISAL (0.03 (0.03 HS.) HISAL (0.04 HS.) HISAL (0.05	ENTON	MG/L			*		(0.0		~			0.002	
MGAL (0.01 (0.01 h9.3 h9.6 h9.6 h9.3 h9.6 h9.6 h9.6 h9.6 h9.6 h9.6 h9.6 h9.6	LICA	MEAL				7.	8.5	10		40.9		6.87	
MEAL 40.2 19.5 49.6 19.3 18.45 19.3 18.45 19.3 18.45 18.45 18.5 18.45 19.3 18.45 18.	LUER	MGAL	7	0.01	~	0.01							
M M6AL 6.9 6.5 6.72 6.49 M6AL 468. (0.4 73. (73. (10.4 6.3 6.5 6.4 6.3 6.4 6.4 6.3 6.4 6.4 6.4 6.4 6.4 6.4 6.4 6.4 6.4 6.4	E I	MG/L		40.2		19.5	49.1			19.3		41.8	
THE C - PEGREF 46. 1.1 C.6 0.0 0.3 0.5 0.4 0.3 0.4	PORTION	MS/L		0.0		5.0	0.	7.2		0.45		9.895	
TURE C - DECRRET 46. 43. 42. 42.0 6.3 6.5 6.2 6.3 6.4	H F TINE	MENT.		168.		74.	122.			73.		153.	
FEIA 1.1 C.6 6.3 6.5 6.4 6.3 6.4	MPFRATHRE	- 3		14		1.1.1	C.			0.00		20.0	
	-230	PC1/				0.0	0						

SUMFACE DATER QUALITY DATA BY LOCATION SITE: SHIPROCK 03/47/87 TO 04/22/89

		554-05 10/07/88	554-01 04/23/89	N 1D - SAMPLE 1D AND L SSS-01 03/17/87	OG DATE	555-01 09/20/87
PARAMETER	UNIT OF MEASURE	PARAMITER VALUE+/ UNCERTAINTY	PARAMETER VALUE+7-INCERTAINTY	PARAMETER VALUE +/-UNITERTATIVTY	PARAMETER VALUE+/-UNCERTAINTY	PARAMETER VALUE+/-UNCERTAINTY
TIN TOTAL SOLIDS UPANTUM VANADIUM ZINC	MG/L MG/L MG/L MG/L	409. 0.0023 0.01 0.005	0.005 26%- 0.6011 9.01 0.005	0.005 299. 0.0004 0.2 0.011	(0.005 226. 0.0009 (0.01 (0.005	(0.003 358. 0.0013 0.01 (0.005

SURFACE MATER DUALITY DATA BY LOCATION STIE: SHIPROFK 03/17/87 TO 64/22/89

		-	999-01 10/07/69	177.66	255 01	68/20/00/0			
PARAMETER	UNIT OF MEASURE	2	PARAMETER VALUE+/-UNCERTAINTY	ATHTY	PA VALUE •	PARAMETER VALUE+7-URITERTATHITY	PARAMETER VALUE + 7 - UPICE RIAIRTY	PARAMETER VALUE+/-UNCERTAINTY	PARAMETER VALUE+/-UNCERTAINTY
ALKAL INITY	MG/L CACO3		130.		126.				
AL UM INUM	M67.				0	0.1			
ANTIMONY	MG/I		0.003			cos			
ARSENIC	FEA.		01.		0	0.0			
BARTUM	MGAL	~	0.1		0	0.1			
BERYLLIUM	MGAL				0 >	.01			
BORON	MG/L				0 >	0.1			
BROHIDE	M67L				0 >	0.1			
CADMIUM	MG/L	•	0.001		0 >	0.001			
CALCIUM	MGAL		72.8		55.1				
CHI CY IDE	MG/L		15.		8	8.9			
CHROMIUM	MG/L		0.03		0 >	0.04			
COBALT	MG/L	-	0.05		0	0.05			
COMOUCTANCE	UMH0/CM		410.		280.				
OPPER	MGAL		0.05		0)	0.02			
TAMIDE	m6/L				0	0.04			
PLUGRIDE	m6/L		0.3		0				
SEUSS ALTHA	PCIAL PCIAL		3.3	3.0	0 0	0.0			
TRUM	MC/I	,	0.0	1.7					
FAD	1/911		0.01			0.03			
MAGNESTUR	HG/I		43.4		42				
MANGANESE	MGAL				0	0.01			
MERCURY	MG/L		3.0002		0)	0.0002			
MOL YBDENUM	MGAL	-	0.01		0 ,	0.01			
WEKEL	MG/L				0	0.0.			
VITRATE	MGAL		1.2		2	2.3			
MINISTE	16/1	,							
DRE FABBUR	MC/L	-	0.1		200	•			
PB-240	PCIA				0.5	20 07			
Н	98		7.57		8				
PHOSPHATE	M6/L		0.1		0)	-			
012-04	PCIAL				0	0.2 0.4			
PUTASSTUM	MGAL		2.6		•				
RA-226	PCIAL		1.0	0.1	0				
RA-228	PCIA		0.3	0.8	0	0.1			
STITE	MG/A		0.010		0.0	0.005			
CTI UED	MC /s								
SOUTH	#6/1		46.0		20.0	0.01			
STRONTIUM	MG/1		6.0		0	0.4			
STRFATE	MG/L		159.		119.				
TO ME TOF	MG/1		- 17		0 ,	0.1			
TH-230	PCT/1		13.73	,	10,5				
THALL TUR	M6/1				0)	0.01			
						The state of the s			

SURFACE WAITER GHALITY DATA BY LOCATION SITE: SHIPROCK 03/47/87 TO 04/22/89

		555-01 10/09/88	555-01 10/09/89 555-01 04/02/89	4 TO - SAMPLE	10 A	01 01	6 DATE	
PARAMETER	UNIT OF MEASURE	PARAMETER VALUE+/-UNCERTAINTY	PARAMETER PARAMETER VALUE+/-UNCERTAINTY VALUE+/-UNCERTAINTY					
TIN	HG/L		(0.005					
TOTAL SOLIDS	MG/L	441.	317.					
IRANTUM	MG/L	0.0023	0.0045					
VANADIUM	MG/L	0.01	10.01					
71115	MEZI	2000 0	6 0 03E					

MAPPER IMPUT FILE: SHP01*UDPSUG100230

ENTER PRINTER STOP COMMAND - PRESS (CRITCR)
PORIOR

GROWND DATER DUALITY DATA BY LOCATION STIE: SHIPROCK 03/47/67 10 09/20/67 REPORT DATE: 03/03/89

FORMATION OF COMPLETION: DAKOTA SANDSTONE HYDRAULIC FLOW RELATIONSHIP: NOT KNOUN

		-				日本 日本 日本 日本	-	the same of any last last last last last last last last			一日 日本
PARAMETER	MEASURE	VAL	PARAMETER VALUE+7-URCERTAINTY	HTY	PASCANETER VALUE 47 - UNCERTATIVE	PACAMETER 7-UNCERTAINTY	UNI	VALUE+7 - URICERTALIBITY	THI	VALUE + / - UNCERTAINTY	VALUE + / -UNCERTAINTY
ALKAL INTTY	MG/L CACO3		81.	1	.59	-	-	44.			
AL UMINUM	MG/L	*	0.1		0.08			0 00			
AMMONTUM	MG/L		6.4		0.5			0.4			
ANTIMONY	MG/L	~	0.003		0.035	55		0.042			
ARSENIC	MGAL		0.003		(0.004			0.04%			
BARTUM	MG/L	~	0.1		0.01			0.02			
BURGH	MG/L		0.25		0.14			0 45			
BROMIDE	MG/L		,				,				
CADMIUM	MG/L	~	0.001		0.008	8		9 000			
CALCIUM	MG/L		105.		1111			107			
C. T. OR I DE	MG/L		36.6		8.95			59.0			
CHECHIUM	MGAL		0.02		90.0		,	0.01			
COBAL	MG/L		90.0		10.01		*	0.01			
COMDUCTANCE	M3/0HM0		3050.		3325.			2900.			
CUPPER	MG/L		0.01		0.01		,	0.04			
Chock the	M6/L		2.11		2.12			1.80			
CEDOCC DETA	PCIAL								11.		
TRUM	#C.71		200						13.		
FAD	MG/1	,	0 00		0.12		,	0.02			
MAGNESTUM	MG/I		13.6		43.5						
MANGAME SE	M6/1		0.40		0.10			0.00			
MERCURY	H67L				1			900000			
MOL YRDENIM	M6/L	-	1.0		10.01			0.03			
MICKEL	H6/L		0.07		10.0		,	0.01			
HIRAIE	MG/L	•	0.1		0.4		~	0.1			
OBG CABBON	116/1	,			0.0		,	0.1			
PR-240	PC1/1		200	* *	41.1			14.2			
ьн	3.00								6.7		
PHOSPHATE	MGAL		0.45		0.61		*	0.4			
PO-240	PCIAL			0.3	0.0	0.4		0.4	9.0		
PUTASSTUM	M67L				7.79			7.34			
RA-226	PCIA			0.3	0.3	0.2		0.3	0.2		
RA-228	PCIAL			6.0	1.2			1.0	3.0		
SELENIUM	MG/L	~	0.002		100.00			9.046			
STELLA	M6.7		45.4		19.5			14.4			
CIRCRITUM	MC/L		879.		917.			842.			
SUIFAIL	#671		2050		2406			4670			
SULFIDE	MGAL						4	0.4			
TEMPERATURE	C - DEGREE	141	30.		31.0			39.0			
TH-736	PCIA			6.4	0.0	0.4		0.1	0.4		
TOTAL POLING			600-0		20070	5		0.020			
	MG/1	,	3116.		3400.			3400.			
	1000		1 20.00		10000	100	,	0.0003			

STIE: SHIPROCK 03/47/87 TO 09/20/87 REPORT DATE: 08/03/89

FURNATION OF COMPLETION: DAKOTA SANDSTONE HYDRAULIC FLOW RELATIONSHIP: NOT KNOWN

DATE		
648-01-05/16/87 648-01-09/20/87		\$ 0.05
648-64 95/16/87	VALUE+/-UNCERTAINTY VALUE+/-UNCERTAINTY VALUE+/-UNCERTAINTY	0.01
648-01 63/17/87		(0.25
		MG/L MG/L
	PARAMETER	UANADIUM

MAPPER DATA FILE NAME: SHP04*UDPGUG403098

ENTER PRINTER STOP COMMANS - PRESS CCR HCR.)

REMOPR

GROUND WATER GUALITY DATA BY LOCATION SITE: SHIPROCK 09/28/85 TO 04/22/89 REPORT DATE: 08/03/89

FORMATION OF COMPLETION: ALLUVIUM HYPRAULIC FLOW RELATIONSHIP: DOWN GRADIENT

		200	18/81/10 10-309	603-01 10/06/63		
PARAMETER	UNIT OF MEASURE	PARAMETER VALUE+/-UNCERTAINTY	PARAMETER VALUE+/-UNCERTAINTY	PARAMETER VALUE+/-UNCERTAINTY	PARAMETER	PARAMETER VALUE+7-UNCERTAIN
AL KAL INITY	MG/L CACO3	302.	231.	185.	1791.	749.
AL UMINIM	MGAL		0.29		0.59	1.0 ,
AMMONIUM	MG/L	34.	41.3	0.7	0.4	6.0
ANTIMONY	MGAL		0.116		890.0	0.074
ARSENIC	MGAL		800.0		0.082	0.05
BARIUM	MG/L		0.02	4	0.01	1.0)
BERYLLIUM	MG/L		1			10.0
BORON	MGAL	0.7	0.48	0.3	4.42	9.0
BROHIDE	MG/L		0.4	•	9.0	0.2
CADMIUM	MG/L	100.00	500.0	100.00)	\$60.00	0.020
CALCIUM	MG/L	378.	520.	322.	549.	369.
CHLOR IDE	MG/L	.96	44.	39.	1060.	.088
CHROMIUM	MG/L		10.00		10.00	10.00
COBALT	MGAL		10.0		10.00	0.05
CONDUCTANCE	M3/OHMO	.0089	2700.	2480.	46000.	9500.
COPPER	MG/L	0.04	0.00	0.02	90.0	0.05
CYANIDE	MBAL	1				10.01
FLUORIDE		2.	0.46	1.3	0.65	
GROSS ALPHA	PCIAL					
GROSS BETA	PCIAL		200. 30.		1300. 100.	730. 110.
IRON	MG/L	0.44	2.09	2.05	0.54	15
EAD	MG/L	,	0.01		0.03	0.05
AGNESTUM.	MG/L	502.	295.	139.	2487.	1650.
TANGANESE	MG/L	66.0	2.36	2.08	5.73	1.27
FRCURY	MG/L		0.0003		20005	20005
MOL YBDENUM	MG/L	0.46	10.0	0.22	6.03	10.0
MICKEL	HG/L		10.0	1	0.05	40.00
VITRATE	MGAL	.685	.110.	•	120.	5.3
MIRITE	MG/L		1.0		1.0	
NOZ & NO3					1	
UKG. CAKBUN	M6/L		73.5		234.	100.
210	FLIAL					6.1
puncpuatr	200	6.76	26.95	7.39	7.47	7.74
D0-240	DC171					
BUTACCTUR	HC //		7.0		7.7	0.0
224	DC171	66.1		47.7		
RA-228	2/174		1.0		0.0	0.5
GET ENTITE	MC/I	2000		, 0 000		
STLICA	MEA	500-0	47.8	0.003	200.0	0.452
STUDER	MG/L		0.7		13.0	
HITTGOS	MG/1	1170	364	3.60		10.01
STRONTIUM	₩6/L	;	4.50	310.	75.0	43.0
SULFATE	M6/L	4940.	2880.	1780	0.63	4,000
SHIFTDE	H6/L		1.0	-	, 0 .	, 000
TEMPERATURE	C - DEGREE	24.	24.0	13.	23.0	4.5

GROUND MATER DIMETTY DATA BY LOCATION SITE: SHIPROCK 09/28/85 TO 04/22/89 REPORT DATE: 08/03/89

FORMATION OF COMPLETION: ALLUVIUM HYDRAUL IC FLOW RELATIONSHIP: DOWN GRADIENT

PARAMETER	UNIT OF MEASURE	PARAMETER UAL UE+/-UNCERTAINTY	PARAMETER VALUE+7-UNCERTAINTY	PARAMETER PARAMETER PARAMETER PARAMETER PARAMETER PARAMETER VALUE+/-UNCERTAINTY VALUE+/-UNCERTAINTY VALUE+/-UNCERTAINTY	PARAMETER VALUE+, -UNCERTAINTY	PARAMETER VALUE+/-UNCERTAINTY
TH-230 THALLIUM TIN TOTAL SOLIDS URANIUM VANADIUM ZINC	PCI/L BG/L BG/L BG/L BG/L BG/L BG/L	6 0.005 8400. 0.789 0.2 0.9	0.4 0.8 0.020 4830. 0.348 0.07	2920. 0.22 0.22 0.33	0.2 1.1 0.075 38000. 3.93 0.447	27200. 2.33 6.33 6.34

SITE: SHIPPOUR
09/28/85 19 04/22/89
REPORT DATE: 08/03/89

		00.000.00			000 01 10/03/03	00/-01 10/06/83
PARAMETER	UNIT OF	PARAMETER VALUE+/-UNCEPTAINTY	PARAMETER VALUE + Z - UBICERTALIFITY	PARAMETER VALUE + Z-UNCERTAINEY	PARAMETER. VALUE+/-UNCERTAINTY	PARAMETER VALLE+/-UNCERTAINTY
ALKAL INITY	M6/1, CAC03	3 450.	339.	477.	294.	120.
AL UMINUM			0.31			
AMMONTON	M6/L	0.5	1.0 >	6.5	0.4	9.4
ANTIMONY	MG/L		890.0		は ない ない ない と で から ない	1
ARSENIC	MGAL		0.017			•
BARIUM	MG/L		20.0			
BERTLLIUM	M6/L					
BURUN	TIG/L	9.6	0.47	9.0	9.0	
CADMINE	MC 21		0.1			1
CAI FILM	MG/I	407	\$ 00.005	100.00	0.001	100.00
CHI DRIDE	MC/I	350	370.	27.5.	424.	495.
CHROMITIM	MG/I	.00.	.000		140.	120.
COBALT	MG/L		0.01			
COMPUCTANCE	UMHOZEM	9560.	3700.	8000	4500-	44950
COPPER	MS/L	0.05	9.02	0.04	0.04	0.11
YAMIDE	MG/L		1	1		
LUMRIDE	H6/L	7.5	5	7.5	5.5	12.
GROSS ALPHA	PCIAL					
TROM	MC A		190. 40.			1
FAD	MG/L	6.3	0.03	90.5	0.54	1.13
TAGHESTUM	M6/L	530.	344.	572.	290	4540
MANGANESE	MG/L	19.1	1.91	0.11	0.54	2.83
FREINY	M6/L		6 0.0002		1	
MOLTBORNUM MITTER	H5/L	0.44	0.01	9.36	90.0	0.27
MITRATE	H6/1	200	95	220		- ""
MITRITE	M6/L		6.4			400-
NO2 & NO3	MG/L	10000000000000000000000000000000000000		1		
ORG. CARBON	MG/L	,	103.		1	
PB-240	PCIAL					1
Н	. AS	7.38	7.45	7.23	7.88	6.82
PRUSE HATE	FF1.4		0.92			
PHTASSTIAM	MG/1	24.5	0.0			'
RA-226	PCIA	0.10		44.0	7.77	.001
RA-228	2017		0.1 0.9	1		
SELENTUM	MG/L	0.00%		(0.005	\$ 0.005	\$ 0.005
STI TEA	MEAL		12.9			
SHURK	M6/1					
STRUCTURE	7:1	2380.	1616.	.0.9	1570.	4520.
SULFATE	H671	7220.	C.092.	2.100	0.00	4,700
SHITTE	1/914		1.0 3	•	4630.	14,000.
II MET RATING	C PEGREE	£ 17.	2.51	17.	7.	18.

GROUPED DATER COMMENTY DATA BY LUCATION SITE: SHERRER TO 04/22/89 REPORT DATE: 08/03/89

		604-01 10/03/35	604-01-07/03/87	605-01 10/04/85	01 07/03/87 605-01 10/04/85 606-01 10/03/85 607-01 10/02/1	607-01 10/02/85
PARAN: TER	UNIT OF MEASURE	PARAMETER UALBE+Z-URGERTAINTY	PARAMETER VALUE + 7 - URLT RIAIRIY	PARAMETER VALUE + 7 - UPICERTAINTY	PARAMETER VALUE + 7 - UNCERTAINTY VALUE + 7 - UNCERTAINTY VALUE + 7 - UNCERTAINTY	PARAMETER UALUE+/-UNCERTAINTY
TH-230 THALLUM TIN TIN TOTAL SULIDS IN URANIUM VANABIUM ZINC	PCIAL MGAL MGAL MGAL MGAL MGAL MGAL MGAL	(0.005 11800. 0.789 (0.01	0.0 0.5 0.037 858. 0.414 0.07	(0.005 10800. 1.19 0.8	, 0.005 7970. 0.844 0.6 4.37	24000. 24000. 2.5 0.49

SITE: SHIPPORK 99728785 TO 0472789 REPORT DATE: 08/03/89

					Company of the Party of the Par	the second name of the second name of the second	The state of the s
PARAMETER	UNIT OF MEASURE	PARAMETER VALUE+/-UNCERTAINTY	ER	PARAMETER VALUE +/ - URLERIATHIY	PARAMETER VALUE+7-UNCERTAINTY	PARAMETER VALUE+7-UNCERTAINTY	PARAMETER VALUE+7-UNCERTAINTY
ALKALINITY	MG/L CACO3	620.0	-	166.0	57.0	845.0	1001
AL UMINUM				0.53		0.2	0.61
AMMONTUM	MG/L	0.2		11.2	170.	380.0	516.
ANTIMONY	MG/L	(0.003		0.039		(0.003	6.129
ARSENIC	MGA	10.0		0.032	1	0.01	0.038
BARIUM	M6/L	1.0)		0.01		0.2	0.03
SERVILIUM	116/L						
BORON	M6/L	9.0		1.13		0.3	0.71
SRUMIDE	H6/L			5.0			0.4
AUTIUM.	M6/L	100.0		500.00	0.001	100.00	500.00
THE OP THE	7/G/1	0.000		310.	366.	9.7.0	510.
HROMILIM	HG/I	9.08		, 000		340.0	310.
OBAL I	HG/I	0.45		10.0		****	
COMDUCTANCE	UMHO/CH	8000.0		+0020	7000	8750.0	7000
THP PER	HS/L	0.08		0.05	50.0	0 00	0 03
YAMIDE	MGAL	(0.01				0.01	50.0
LUDRIDE		1.5		0.34	.01	0.8	0.54
GROSS ALPHA							
DRUSS BEIR	FEI/E			780. 130.			1100. 100.
FAD	MG/1	0.13		0.03	0.48	0.45	0.01
MULESTUR	MGAL	467.0		1849.	1170.	4580.0	2340
HANGANE SE	MGAL	1.42		3.10	2.65	4.84	6.62
HFRCHRY	MG/L	(0.0002		200000		(0.0002	(0.0002
MOLYBOENUM	M6/1.	0.14		10.00	0.2	0.40	0.01
MILKEL	Mb/L	0.11		0.04		0.44	0.05
MITELIE	167 167	840.0		840.	1800.	410.0	365.
NOS & NOS	MC/L	1.0		1.0.1		1.0	• • • •
DRG. CARBON		480		387		926	, 20c
PB-210		1.3	:			7.9	.683
	Stl	7.35		7.09	7.09		4.73
PHOSPHATE	MG/L	1.0)		1.32		6.4	1.30
PO-240	PCIAL	6.3	1.3	0.3 1.3		1.5	2.
POTASSIUM	HG/L	112.0			89.3		
RA-226	PC1/L	0.1	6.3	0.1 0.1			
RA-228	PELA	0.0	6-0			0.2 1.0	0.2 0.9
SELL PIUM	W67	0.022		0.434	300.0	52	0.250
SHILL	116/1	, , , ,		14.9		7.	11.7
Control	1007	0.01				0.00	
STRUMETTIM	ME/I	3400.0		3563.	1390.	1220.0	2642.
SHEFAIL	MG/L	0.0348		1 canon	0237	42.4	67.60
SHETTOL	M571	v		1.0	C37.7.	0.659.7	, 13400.
II MIL BATHET	C - DEGREE			2.4.2	17	21.0	22.0

SITE: SHIPRRCK.
09/28/85 TO 04/22/89
REPORT DATE: 08/03/89

		607-04 09/19/86	78/10/40 16-269	608-01 09/78/85	697-91 09701/87 608-01 09728/85 608-01 09/18/86		18/22/81
PARAMETER	UNIT OF MEASURE	PAPAMETER UALUE+7-1.81CERTAINTY	PARAMETER VALUE+7-UNCERTAINTY	PARAMETER PARAMETER	VALUE - / - UNCERTAINTY	PARAMETER VALUE + / - UNCERTAINTY	ETER
TH-230 THALLIUM TIN TOTAL SOLIDS PURANTUM VANADTUM ZINC	PCI/L BS/L BS/L BS/L BS/L BS/L BS/L BS/L BS	4.5 2.9 4.600.0 4.600.0 0.834 0.21 0.728	0.2 4.0 9.040 24000. 1.56 0.45	(0.005 11300. 1.78 0.4 0.245	1.0 1.1 0.020 16800.0 1.72 0.21	26000.	3

SITE: SHIPPOOR 10 04/22/59
SITE: SHIPPOOR 09/22/59
REPORT DATE: 05/03/69

UR PARAMETER MEA		· · · · · · · · · · · · · · · · · · ·	the second second second	日本 かっちゅうから	the state of the state of the state of	The state of the state of the state of	The section of	The second second second	the same and the same as an art of the same as the sam	-	The same and the last of the l	三十二十二十二十二十二十二十二十二十二十二十二十二十二十二十二十二十二十二十二	· · · · · · · · · · · · · · · · · · ·	
	UNIT OF MEASURE	PARAMETER VALUE+/UNCERTAINTY	RAINTY	94 UE +7	PARAMETER +7-UNCERTAINTY	AIRTY	UMI	PARAMETER	TAIRTY	עמו	PARAMETER VALUE +/ UNCERTAINTY	RIGINITY	PARAMETER VALUE+/-UNCERTAINTY	REPRINT
ALKALINITY MG/L	A CACO3	1001.		+	1001.			1001.			1001.		1138.	
ALUMINUM MG/L	7	19.0			0.61			0.61			0.62		0.4	
AMMONTUM MG/L	1	546.			542.			542.			555.		460.	
ANTIMONY MG/L	7	0.077			0.078			9.084			0.077		0.037	
ARSENIC MG/L	1	0.032			0.041			0.040			0.037		0.03	
BARIUM MG/L	1	0.03			0.03			0.03			0.03		(0.1	
BERYLLIUM MG/L	7							-			4		10.01	* 1
BORON MG/1	7	0.74			6.73			0.74			0.74		0.4	
BROMIDE MG/1	/L	1.0)		,	0.1			0.4		,	0.4		1.0)	
CADMIUM MG/L	7	\$ 9.005		,	0.005		+	0.005		+	0.005		0.048	
CALCTUM MG/L	7	540.			505.			503.			501.		449.	
CHLORIDE MG/L	1/	5.0			500.			525.			545.		490.	
CHROMIUM MG/L	7	10.00		~	0.01		~	0.04		,	0.01		10.01	
COBALT MG/L	7/	10.00		~	0.01		,	0.01			0.02		(0.05	
CONDUCTANCE UP	H3/OHME	7000.		71	70007		1	700%.			70007		8500.	
COPPER MG/L	7	0.03			0.03			0.03			0.03		0.03	
	7												10.00	
	7	05.0			0.49			0.50			0.54		0.4	
c	PC1/L	1800.	300.	25	2000.	300.		2100.	300.		2000.	300.	1600.	300
S BETA	PCIAL	800.	110.	+	10001	100		.098	110.		1100.	100	1200.	100
	7	0.01		_	0.01		~	0.01		~	0.01		0.46	
FAID MG/L	7:	0.03						0.05			0.04		10.01	
		£373.		, C.	2354.		,	6397.			2390.		2350.	
HANDRINE SE MOVE		50.00		,	80.7			01.10			7.73		7.16	
		70005			20000			0.000		,	0.000		20000	
	7.	0.00			0.00			0.01			0.00		0.00	
		20.0		36	20.00			20 40			2000		2000	
	7	0.1		,	0.1		,	0.4		,	0.4			
03	7													
140	7	344.			305.			303			342		298	
	FEIA												1.2	1.2
		6.72			6.72			6.72			6.72		88.9	
PHOSPHATE MG/L	7	1.57			1.53			1.55			1.41		1.0)	
	PCIAL	6.5	6.0		1.1	1.2		0.5	6.9		0.4	6.0		0.7
POTASSIUM MG/L	7	162.			161.			163.			166.		185.	
RA-226 PC	PULL	0.2	6.2		0.0	1.0		0.0	0.1		0.1	0.4	0.0	6.2
RA-228 PC	PCLA	1.4	8.0		1.3	1.4		9.6	0.0		1.2	1.5	0.2	0
STLENTIN MG/L	7	0.230			0.772			0.233			0.746.		0.088	
STITEN MEA	7	12.3			12.2			12.4			12.6		6	
	A.							· · · · · · · · · · · · · · · · · · ·					(0.01	
	7	2621.		23	2621.			2632.			2628.		2440.	
E	7	45.3			45.5			15.4			45.5		14.1	
	//	13200.		131	13000.			1,000		•	3490.		13400.	
THE IN MICH.	7	1.0			0.1		*	0.1			0.1		1.0	

SITE: SHIPPACK 09/78/85 TO 64/27/89 REPORT DATE: 08/63/89

2	TER	PARAMETER PARAME	ARAMETER PARAMETER -UNCERTAINTY VALUE -/- UNCERTAINTY VA	PARAMETER PARAME	PARAMETER VALUE - / - UNICERTAINTY
25500. 3.25 0.17 0.17	1	26000. 26000. 3.46 0.18	2.0 1.5 0.035 76300. 3.46 0.48	0.2 4.2 0.037 26400. 3.07 0.48	0.1 0.6 0.02 0.046 26500. 3.73 0.46

STIL: SHIPPOUT

09728/85 TO 04727/89

REPORT DATE: 08/03/89

		607-01 07/27/85	90//1/60 10-609	604-01 07/21/8/	610-01 07/27/63	640-01 09/18/86
PARAMETER	UNIT OF MEASURE	PARAMETER VALUE+/-UNICERTAINTY	PARAMETER VALUE+/ UNCERTAINTY	PARAMETER VALUE + / - UNCERTAINTY	PARAMETER VALUE +/-UNCERTAINTY	PARAMETER VALUE+/UNICERTAINTY
GEKAL INITY	MG/L CAC03	595.	820.0	1039.	380.	348.0
AL UMINUM	MG/L		0.2	0.73		0.3
AMMONTUM	H6/L	180.	370.0	.878	.92	30.0
ANTIMONY	MGAL		(0.663	0.055	1	€00.00 }
CRSENIC	MG/L		10.00	0.034		10.0
BARTUM	#67L		0.1	0.04		1.0
BERYLLIUM	MG/L	1				1
BURGN	M6/L	0.7	0.3	0.75	7.1	0.5
Browing	M6/L			1.0		
CADMIUM	m6/L	(0.001	163.0)	(0.005	(0.001	0.001
CALCIUM	MG/L	306.	427.0	504.	544.	563.0
CHI OR IDE	MG/L	150.	340.0	520.	210.	260.
CHROMIUM	H6,7		0.06	(0.01		90.0
TUBOL T	MG/L		0.14	10.0		0.12
COMOLICIANCE	UMH0/CM	7500.	0.0009	5690.	.0000	7000.0
OPPER	M67.	0.04	0.07	0.05	0.04	0.05
YAMIDE	M67L		(0.01			10.0)
TUDRIDE	MG/L.	8.7	0.8	9.49	10.	6.7
GROSS ALPHA	PC1/L			2200. 300.	1	
GRUSS BETA	PCIAL		•	920. 120.		
IRON	II6/L	0.4	0.43	4 0.01	0.13	0.40
EAD	MG/L		0.01	0.03		10.0
TAGNEST UM	M6/L	.056	1550.0	2479.	985.	1100.6
TOMBANESE	M6/L	2.73	7.48	8.04	1.17	1.53
TE REINEY	H6.7L			0.0902		0.0002
MON. YBDE MUM	me/L	60.0		0.01	0.05	0.00
WILKEL	mb/t.		0.14	0.0.		0.10
MITRATE	M6/1.	1600.	410.0	4000.	3600.	440.0
WITRITE	MG/L		0.1	1.0)		6.0
HUZ & NU3	#6/L		- 000	*****	1	' 8
SHU. CHREUN	116/L			31/-		
10	rein.		9.0			6.5
DISCOUNTE		/-01	79.0	6	1.04	٠٠٠٠
SPHAILE	H6/L			1.4/		
0-240	PCIAL		1.1	6.6	1	0.8 0.7
PUIASSIUM	MG/L	6.08			72.4	
RA-226	PCIA		0.2 0.3			0.1 0.2
RA-228	PCIA			0.0		
WILL STILL	MGAL	500.0	500.0	0.728	500.0	500.0
SH ICA	Z-22		, , , , ,	13.0		, , , ,
1111	107					10.01
TOTAL STREET	1971	878.	910.0	26.17.	1540.	870.0
THE LATE	MS/A	4367	11.3	0.34		6.7
CAB FALL	MIC CI	toso.	0.0000	13400.	4069.	6500.0
1111						

STIE: SHIPPOCK
67/22/55 TE 04/22/59
REPORT DATE: 08/03/59

O V D V D V D V D V D V D V D V D V D V	UNIT OF	609-01 09/29/85 PARAMETER	609-61 09/17/86 609-01 09/21/87 610-01 09/29/85 PARAMETER PARAMETER	609-01 09/21/87 PARAMETER	640-01 09/29/85 FARAMETER	640-04 09/48/86 PARAMETER
F HEATTE IER	HEHOORY.	VALUE - VORCER INTRIT	Out IN 17 OFFICE KINDER	VALUE +/ - UPLERIALINITY VALUE +/ - UPLERIALITY VALUE +/ - UPLERIALITY VALUE +/ - UPLERIALITY	VALUE ATAINTY	VALUE + / - UNICERTAINTY
TH-230	PCIAL		2.0 1.4	0.6 1.1		0.9 0.8
HALLION	M5/L	1				1
TIN	MG/L	(0.005	0.025	0.030	(0.005	0.010
TOTAL SOLID	S MG/L	1050e.	15800.0	26800.	12000.	12700.0
URANIUM	MGAL	1.4	2.17	3.04	1.52	1.03
UNHABIUM	MG/L	0.3	0.23	0.20	0.3	0.20
ZINC	MGAL	0.147	0.203	0.211	0.138	0.073

STRESHIP UNITE DRIM LEY DATA BY LOCATION STRESHIPS STRESHIPS 10 04/22/89 BFFORT DATE: 05/03/89

MILE OF PARMETER CARDINITIES CARDINITI			640-04 09/21/87	610-01 64/03/89	58742746 10-119	18/64/60 10-119	58/62/60 10-219
Maintenance	PARAMETER	UNIT OF	PARAMETER UALUE + / - UMCFRTAINTY	VALIT UNICESTATUTY	PARAMETER VALUE -/ - URETELATRITY	VALUE + / - URLERTAINTY	VALUE - / - INCERTAINTY
The part	ALKALINITY			424	200.7		Contract Con
Marie Mich. 37.4 62.5 45.5	AL UMINUM			6.9		0.36	243.
The column The	MONTON	MGAL	37.4	82.	15.	24.0	
No.	TIMONY	MG/L	9.103	0.000		0.004	
11 11 11 11 11 11 11 1	SENIC	MG/L	0.028	0.02		6.626	
Maritime Michael Mic	411H	MGAL	0.03	1.0)		0.02	
Heart High	TYLE TUM	MGAL		0.01		0.00	
Heart Heart Color Colo	NON	HG/L	5.73	0.4			
The color The	HIDE	M6/L	4 0.1	1.0)		0.83	6.3
Maintenance	HILL	MG/L	\$ 6.005	6 007	, 000	0.1	
The color The	CIUM	MG/L	507.	46.4.	Tree.	500.0	100.00
MILE MEAL 0.001	ORIDE	MG/L	300.	340	420	404.	161.
No.	MILIM	FIG.1	10.01	6 0.04		. 0.0.	
Pair laber Pair P	1 101	MGAL	10.6	50.00		20.0	
High High High 0.05 0.04 0.04 0.04 High High High 0.05 0.05 0.04 0.04 High High High 0.05 0.05 0.05 High High High 0.05 0.05 0.05 High High High 0.05 0.004 0.04 High High High 0.05 0.004 0.04 High High High 0.05 0.004 0.04 High High High 0.05 0.004 0.05 High High High 0.05 0.05 0.005 High High High 0.05 0.05 0.005 High High High 0.05 0.05 0.05 High High 0.05 0.05 High High 0.05 0.05 High 0.05 0.05 0.05 High 0.05 0.05 0.05 High 0.05 0.0	ENICTANCE	UMH6/CH	4900.	4250.	7000	4040	, vace
March Marc	1534	MG/L	0.05	0.07	0.04	, 000	1630.
Hearth H	INTOE	MG/L		0.01			20.00
State Stat	URIDE	₹6.7£	5	5.0		0 57	
State Stat	PSS ALPHA	PCIAL		789. 490.		750	
HEAT Co.01 Co.16 Co.16 Co.16 Co.16 Co.08 Co.09 Co.00	ISS BETA	PETA		710. 80.		430 40	
No.		MC/L	6 0.04	0.44	0.45.	0 00	***
Color Colo	9	H6.7	0.01	10.0)		0.02	****
Control Cont	See Selling	M6/L	1173.	1300.	677.	722.	48.4
No.	Energy St.	116/4	2.27	7.47	0.87	4.72	9.66
RATE REAL 0.02 0.04 0.04 0.05 RATE REAL 0.07 0.05 0.05 RATE REAL 0.07 0.05 0.05 RATE REAL 0.07 0.04 0.04 SU	Victor man	He/L	2000.0	2000-9		(0.0002	
RATE	PETS.	ME/L	0.05	10.01	1.0	0.00	9.2
FITE MGAL (C.1 (190. 190. 190. 190. 190. 190. 190. 190.	BATE	MC/I	10.0	0.04		20.0	
\$\cap\$ \$\text{MR3} \$\text{MRA} \$\cap\$ \$\cap\$	RITE	MG/1		.0072	2060.	. 1110.	
Maria Mari	S NO3	MG/L				1.0	
State	CARBON .	MGAL	147.	100			
SPHATE SU	210	PCIAL		0.3 0.6		4/3-	
SPHATE MSAL 1.172 0.45		. IIS	6.74	36"9	7.47	7.50	7 **
210 PCIAL 0.46 0.7 0.4 0.4 57.2 0.4 0.6 57.2 0.4	SPHATE	MG/L	1.12	1.0 %		0.45	0
## 1674 93.6 6.1 57.2 55.4 6.0 6.1 57.2 55.4 6.0 6.1 57.2 55.4 6.0 6.1 57.2 55.4 6.0 6.1 57.2 55.4 6.0 6.1 57.2 55.4 6.0 6.1 57.2 6.2 6.0 6.1 57.2 6.2 6.2 6.2 6.2 6.2 6.2 6.2 6.2 6.2 6	2.10	PEIA		6.4 6.4		0.7 0.4	
7276 PCIA 0.4 0.2 0.0 0.4 0.4	ASSIUM	MGAL		177.	57.2	54.4	
PCIA	525	PCIAL		0.0			13.7
	228	PELA		6.6 6.8			
HEAT 1576. 1770. 1	unia.	W6/1	0.459	0.645	(6,60%		1 0 000
High 1776. 1770.	11.0	1797	14.1	10.	*	24.5	
HEAT TOTAL T		17.71		10%			
Mil. 7079. 1920. 1	ONTINE	MC/1	2.76.	1000	1,700.	1979.	729.
THE PACKET TOTAL T	FAIL	M1.74	70.0	0.04		42.0	
C DECREE TO THE PARTY OF THE PA	f flot	MI:/1	* * * *		. 54.5	6750.	1997.
	WIT TO THE	C MERT			****	10.4	•

STH: SHIPPOCK
60728-75, TO 64722-89
EFFORT FAIL: 63763789

PARAMETER	UNIT OF MEASURE	PARAME VALUE + / -URICE	PARAMETER VALUE AZ GRESTETATETE	PARAMETER VALUE +/- URTER LATERY		PARAMETER PARAMETER ALIE + / - UNCERTAINTY
TH-230 THALLTUM THA TOTAL SOLIDS UPANTUM VANABIUM ZING	PCIA 1671 1671 1671 1671 1671 1671	0.048 45509. 6.970 0.17 0.054	6.0 0.02 0.035 16200. 1.92 0.11	6 6.005 10:400. 6.072	4.0 4.0 6.045 42300. 6.749 6.10 6.043	4470. 4470. 0.44 0.04

STILL SHIPPOOK 09/72/159 07/22/159 07/22/15 10 04/72/159 07/22/15

			四日 在日日 日日日日日 日日 日本 日子 日華 日華	日本の方の大田田田田田田田田田田田田田田田田田田田田田田田田田田田田田田田田田田田	Carlotte St. Land	· 一日 日日 一日 日 日 日 日 日 日 日 日 日 日 日 日 日 日 日	一 大田田田田田	日本の日本の日本の日本の日本の日本の日本の日本の日本の日本日本日本日本日本日	The latest and the la	
PARAMETER	UNIT OF	VAI	PARAMETER VALUE + 7 - UNCERTAINTY	PARAMETER VALUE + 7 - UNITER TATMETY	WIY	PANAMISE VALIMINA (HETRIAINIY	RAINTY	PARAMETER VALUE */ - SHUTRIAINIY	VALUE +/ - UNITERIALITY	BINI
ALKALINITY	MG/L CACO3	-	291.0	273.		2.44.	Name and Address of the Owner, where	200	C40 0	1
AL HIM I MITH	MGAL		0.2	0.14		1.0			0.3	
AHHONTUM	MS/L		24.0	9.51		1.0)		5%.	67.0	
ANTIMONY	MG/L.	~	0,003	0.042		0.004			6 0.003	
ARSENIC	MG/L	+	0.01	\$60.0		10.0		à	10.01	
BARTUM	MGAL		0.2	\$0.04		1 0)			0.4	
BERYLLIUM	MGAL					10.0				
HORON	MG/L		6.3	0.19		1.0		2.5	0.3	
BROMIDE	MGAL			1.0)		1 0 3				
CADRILL	P.G.A.		0.001	\$ 00.005		100.00		0.001	100.00	
CALCIUM	MG/L		452.0	206.		194.		4655.	547.0	
CHI OR IDE	M6/L		24.	47.8		27.		240.	280.0	
CHICATION	MS/L		0.04	10.01		10.01			0.05	
COMPANY AND	MG/L	~	50.02	10.00		(0.03			0.44	
COMPLETANCE	CIMINO/CH		2000-0	1800.		1175.		7000.	7750.0	
CASHERE	H6/L		20.0	16.0		(0.02		0.05	60.0	
CHAMINE	HG/L	,	0.01			10.0)			10.01	
COOCC ALDIA	m6/L		0.8	4.		0.7		10.	9.0	
CROSS HETA	PCTA				70.	100.	20.			
IROM	#6/1		0.65			00 00				
t AD	MG/L		0.01	0.00		00.00		/0.0	0.40	
MAGNES TUR	MG/L		85.2	77.4		75.0		Bot	10.00	
MANICANE SE	MGAL		3.39	3.50		9.41		2.88	2.44	
M Re JIRY	M67L	~	0.0002	2000-0		(0.0002			6 0.0002	
WILL YRDE MIN	MG/L	,	0.10	0.03		10.0)		0.45	9.11	
MILERI	100		0.04	10.01		10.04			0.43	
STIGHT	MG/I		9.091	0.0		51.		300.	320.0	
NO2 & NO3	MG/I							1	6.0	
ORG. CARBON	MG/L		74.	79.0		673				
PB-240	PCIAL		1.4 0.7			9.4	0.7		.074	
	. as		20	7.02		7.23		7.3		
PHUSPHATE	HG/L	•		0.34		1.0)				
PB-246	PCIA		0.0	1.0	0.7	1.1	0.5		6.4	0.0
10110310H	mb/L			20.2		11.3		64.3	477.0	
977-040	PC17L			0.0	1.0	0.1	0.4		6.5	0
Contraction	P.C.N.		8.0	5,5	6.0	0.0	0.8		9.0	0.0
THE IFA	MIS/I	,	9.002	0.020		270.0		. 0	(0.005	
SHUER	MG/1	,	0.01	8.4		13.			9.	
CONTINE	MC./4		10.00			0.01			6 0.01	
STRUMETINE	H6,71		2.0	.55.		133.		1466.	1230.0	
SHITATE	11671		1100.0	1450.		7.7			5.2	
211 1 HV	M6.71		1.0					110.	0.0402	
2.6 100.7 49 A. T. LANS.						41.14				

Grown water observe bata by location sitte surrence of/20/05 to 64/22/09 appoint bate, 98/03/89

FORMATION OF COMPLETION: MEINVION BRADIENT HYDRAUM IC FLOW RELATIONSHIP: DOWN GRADIENT

PARAMETER	UNIT OF MEASURE	PAPANETER UM. UE +/ - UNCERTAINTY	POSCHETER VALUE +/ - UNCERTAINTY	PARAMETER PARAMETER PARAMETER PARAMETER PARAMETER PARAMETER PARAMETER VALUE -/ - UNITERIALITY VALUE -/	VALIE - / - INCERTAINTY	PARAMETER VALUE +/ - UNCERTAINTY
TH-230 THALLTUM TIN TIN TOTAL SOLIDS URGALIUM VAHADIUM ZINC	PCIAL MEAL MEAL MEAL MEAL MEAL	6.0 0.4 6.005 1970.0 0.192 0.23	0.0 6.3 0.048 2060. 0.165 0.04	5.0.0 0.01 6220. 0.263 0.026	(0.095 42706. 1.44 0.6	4.5 6.9 44200.0 1.80 0.46

SITE: SHEPBOCK 094/22/09 8Y LOCATION SITE: SHEPBOCK 094/22/09 RCPORT DATE: 05/63/09

FORMAZION OF COMPLETIONS ALUVIUM GRADIENT HYDRAIR IZ FLOU RELATIONSHIP: DOUN GRADIENT

			613-61 09/18/87	614-01 99730785	214 01 09/10/07	814.01 10.41788	614-01 04/03/89
The cace	ARAM TER	HEASURE	PARAMETER UALUE + / - UNITERTATIVITY	PARAMETER VALUE */ - URITERIALISTY	PARAMETER UM UE+7-URETETATREY	PARAMI TER	VALUE - / UNCERTAINT
HEAT 90.43 EB. 60.44 HEAT 90.43 EB. 60.44 HEAT 90.43 EB. 60.44 HEAT 90.43 EB. 60.44 HEAT 90.25 141. 90.29 HEAT 90.25 141. 90.29 HEAT 90.25 141. 90.29 HEAT 90.20 140. 90.20 HEAT 90.20 140. 90.20 HEAT 90.20 90.20 90.20 HEAT 90.20 90.20 HEAT	KAL INTTY		4	554.	426.	406.	404.
HEAL 90.473 HEB. 644.5 HEAL 0.0473 HEB. 644.5 HEAL 0.055 141. 0.048 HEAL 0.055 141. 0.048 HEAL 0.055 141. 0.049 HEAL 0.055 141. 0.049 HEAL 0.001 140. 140. 140. 140. HEAL 0.001 140. 140. 140. 140. HEAL 0.002 140. 140. 140. HEAL 0.001 140. HEAL 0.001 140. 140. HEAL	HINIMI.	MG/L	0.43		9.44		1.0
HEAT 0.049 0.004	MUNITUM	MGAL	6.06		64.5	56.	57.
HEAT 0.049 0.044 HEAT 0.044 HEAT 0.045 HEAT 0.041 HEAT HEAT 0.041 HEAT	TIMONY	MGAL	0.103		0.048	6.027	0.007
HEAT 0.05	SENIC	MG/L	0.019		0.016	0.05	10.01
HEAL 0.65	NR I UM	MG/L	0.02		0.03	1.0 3	1.0)
HEAL 0.65	HTL IUM	m6/L					10.00)
	MON	MG/L	9.65	••	67.0		6.3
	OF THE PARTY OF TH	M6/A	0.2		1.0 >		1.0)
The color	HOLIUM C. C. T. C.	V9W	500.0	100.00 >	500.0 >	0.002	0.00B
TEAL C. 0.01 J. 10. C. 0.01 T. 10. T. 1	i correct	MS/L.	546.	4/0.	476.	407.	428.
CE UMBACCA 4320. CE UMBACCA 4320. CE UMBACCA 4320. MEAL 0.062 0.007 0.019 MEAL 0.060 0.019 MEAL 0.091 0.019 MEAL 0.091 0.019 MEAL 0.092 0.019 MEAL 0.092 0.019 MEAL 0.090 0.019 MEAL 0.091 0.009 MEAL 0.091 0.091 MEAL 0	I THE LINE	TIS/L	230.	340.	502	240-	.250.
CE UNINGCO, 4320 4275 RS REAL 0.02 10.07 0.01 RS REAL 0.02 7. 920 460 6.03 REAL 40 40 7. 920 460 860 REAL 60.03 40 0.43 6.04 40 6.04 REAL 60.03 40 6.20 40 41 41 REAL 60.03 42.03 42 42 42 42 42 REAL 60.03 82.04 42 60.04 60.04 42	EALT	110/L	0.01		10.01	0.20	10.01
	MINICI VANCE	HOVE THE	4330	A Contract	10.01	90.0	50.02
High	PPEB	MC /4	1350.	15000.	***************************************	F500.	6190.
Heart 10.60 7. 140. 6.53 140. 6.54 140. 6.54 140. 6.54 140. 6.54 140. 6.54 140. 6.54 140. 6.54 140. 6.54 140. 6.54 140. 6.54 140. 6.54 140. 6.54 140. 6.54 140. 6.54 140. 6.54 140.	CANTOE	MC./1	20.0	70-0	0.01	0.03	20.02
NETAL 989. 110.	HORIDE	MG/1	0.40	c	0 53		0.04
NETAL 640. 40. 0.45 650. 40. 28 NEAL 0.03 6230. 40. 6.04 NEAL 1021. 5.04 6.04 NEAL 0.04 6.05 6.06 NEAL 0.04 6.05 6.06 NEAL 1060. 1200. 1200. NEAL 1060. 1200. 1200. NEAL 1060. 1200. 1200. NEAL 1060. 1200. 1200. NEAL 1020. 1200. 1200. NEAL 1200. 1200.	DES AI PHIA	1/134			65.0	0.0	
HGAL	DSS RETA	PCIAL			450	200 40	420.
HGAL 1023.	NO	MG/L		0.43		.00	
HGAL 1021. 1230. 144.7 144.7 144.7 144.7 145.4 145.5 144.7 145.5 144.7 145.5	AN OA	MG/L	0.03		0.04	6 0.64	20.00
HGAL (0.0002	GHESTUM	MG/L	4024.	1230.	962.	1136.	974.
MGAL (0.0002 0.38	MCANE SE	M6/1	4.82	5.01	4.17		3.51
15.4	RCIRY	MG/L	2000-0		2000.0 3	6,0003	4 0.0002
FSAL 1060. 1200. 1886.	CECT NUMBER	M6/L	0.04	0.38	20.0	0.23	10.0)
15.01	TOATE	1107/E	10.0	-	60.03		40.04
HGA 125. 126.	TRITE	MC/I	1000.	1,000.	686.	1120.	1200.
Column C	2 R MA3	MCA			0.1		
PCIAL 6.94 6.92 6.39 6.39 6.39 6.39 6.30 6.39 6.30 6.39 6.30 6.39 6.30 6.39 6.30 6.30 6.30 6.30 6.30 6.30 6.30 6.30	G. CARRON	MGAL	125.		*30	250.	. 10
SU 6.94 6.92 6.31 6.31 6.31 6.31 6.31 6.31 6.31 6.31	-240	PCIAL					
MGA		. ns	45.94	6.97	6.67	A. ff.	7.04
PCIAL 0.9 0.7 85.5 0.6 0.6 0.6 PCIAL 0.1 0.2 85.5 77.5 0.1 17.5 0.	DSPHATE	MG/L	86.0		0.31	6.4	. 0
MGA 74.5 85.5 77.5 9.1 9.	210	PC1/L			6.6		0 7 0 4
PCIA 0.1 0.2 1.0 0.1 1.1 1.2 1.2 1.0 0.1 1.2 1.2 1.0 0.1 1.2 1.2 1.2 1.2 1.2 1.2 1.2 1.3	TASSTUM	MGAL		55.5	77.5	777.	
NCIA 0.5 1.0 0.005 1.2 1	-226	PC1/AL				1.0	
MEA	228	FETA				1.1	0.2 0.9
HGA 14.7 15.6 HGA (4.30) HGA HG	HEIRIN	M5/1	6,793	(0.005,		0.430	3
MCA 1464. 2790. 1440. 1450.	1100	MS/1	1.6.7		F5.4		11.
HEAT (2.70 2.70 4.500. 7.700. 4.500. 7.700. 4.500. 7.700. 4.500. 7.700. 4.500. 7.700. 4.500. 7.700. 4.500. 7.700. 4.500. 7.700. 4.500. 7.700. 4.500. 7.700. 4.500. 7.700. 4.500. 7.700. 4.500. 7.700. 4.500. 7.700.	ID THIN	MC /I		-		6.63	6 0.01
MEAT (0.1 0.10.) 15.50 (0.3 15.5) 15.50 (0.3 15.5)	REGETTIN	MEN	1104.	.660	1110.	1729.	*350.
HEAT C DESIGN C 0.1	BEATE	MG/1	69700	2450	4490	7230	5-1
r proper 22.0 to.5	HITTEL	MIS.A.	1.0 >				* 6 4
	BRITERING	F DECRET	4°55	16,5	21.0	0.00	**

STIE: SHIPPOUR OF/22/89 REPORT DAIL BY LOCATION STIE: SHIPPOUR OF/22/89 REPORT DAIL: 08/63/89

ARAMI TER	HEASTER	PARAMETER UALUE+/-UMCERTATUTY	VALUE -/ UNITERE	PARAMETER MENTERALIER	PARAMETER VALUE +7 - UNCERTAINTY	PARAMETER VALUE + / - UNCERTAINTY
TH-230 THALL TUP TTR TTR TOTAL SOLTOS URANTUM VANADTUM ZTRC	Z Z Z Z Z Z Z Z Z Z Z Z Z Z Z Z Z Z Z	4.2 4.4 0.049 14900. 0.804 0.402	4.78 0.58 0.58	6.4 6.9 6.049 11209. 0.639 0.42	42390. 42390.	0.3 0.04 0.024 12400. 0.40

GROWN WATER UNMITTY DATA BY LOCATION STITE: SHIPPDLK 09/79/35 TO 04/79/89 REPURT DATE: 06/03/89

FORMATION OF COMPLETION: ALLUVIUM GRADIENT HYDRAULIC FLOU RELATIONSHIP: DOWN GRADIENT

		BABARTTE	PARAMETER	PARAMETER	PADAMETER	PARAMETER
PARAMETER	MEASURE	UM. UE + / - UNE ENTAINTY	VALUE AZ UBBLERIATINIY	VELUE OF THE PERCENTY	VALUE +/ - UNCERTAINTY	VALUE +/- UNICERTAIN
ALKAI TRITTY	MG/I CACO3	473.	489.	765.	246.	247.0
AL LIMITATION			6.46	1.0 1		2.0
AMMONTON	MG/I	-05	490.	200.	6.4	
ANTIMONY	MG/1		6.074	0.049		0.003
ARCENIE	MG/1		0.034	60.63		
RARTIN	MG/L		0.03	1.0		
BERYLL THE	1/54			10.00		
RURGN	MG/L	4.9	0.92	9.0	6.0	6.0
BROWIDE	MG/L		1.0	0.1		* 00 00 4
ADMILIE	MG/L	100.00 3	(0.005	0.013	100.00	240.0
SALCTUM	MG/L	406.	510.	37.6.		32
THE CHATOF	HG/L	246.	2865	640.	10.	0.04
CHROMIUM	MG/L		10.00	0.01		0.04
DBALT.	MG/L		20.0	50.03	****	2000.0
CHADIN'T ANCE	UMHO/CH	10500.	5540.	100001	1630.	, 0.02
TIPPER.	HG/L	0.02	0.01	6.03	20.00	0.04
YANIDE	MG/L			10.01		7.0
THURIDE	MG/L	8.5	0.39			
SRINGS OF PHA	PCIA		1209. 20.	1900. 500.		
RESS BETA	PEIAL				. 6.67	6.63
IROM	MGAL	90.0	0.01	0.10	50.00	10.00
FAD	MG/L	, :	60.03	4270	2K.3	86.7
HAGNESTUR	ME/L	1340.	1636.	82.6	0.48	0.92
MANIGARE SE	MG/L	2.77	7 6 6667	6 6 6002	1	2000'0
T RCIRY	#6/1.	***	2000	0.03	6.25	0.14
HIM YEDE MUH	m6/1.		0.01	0.04	4	40.04
WILKIT.	115/L	****	4570	3300.	9.	9.091
WITH THE	MC/L	-0011	1.0)			1.0
- 110.3	MC /1					
OUC CABBINE	MC/L		465.	143.		
.B. 240	PFIA			1.4 9.7		5.5
	. 98	7.01	4.83	66.93	7.2	
HIPSPHATE	M6/L		1.04			200
01.2-0	PEIA		1.4	3.3		
PUTASSIUM	MG/L	103.			*8.4	
RA 726	PCIA		2.0	0.0		0.7
228	PCIA			0.0	The same	
ST.Fb.III	MG/L	\$ 0.005	0.755	6.007	0.000	40
SH HEA	HG/1		\$2.4	10.		
SHUFF	MG/L.			10.0	***	0 2000
HI.16US	MG/1	37.70	2407.	14.0.	210.	2.4
TERRITIME	MIN		46.4	23.00	2007	1400.0
THEATT	MC/J.	12 100.				
	The same of the sa		-			

SITE: SHIPEOCK.
69/25/85, TO 64/22/85
REPORT DATE: #0/63/89

FORMATION OF COMPLETIONS ALLINITH HYDRAULTC FLOD RELATIONSHIP: DOWN GPADIFUT

PARAMETER	UNIT OF HEASURE	PARAMETER VALUE - / - URSERTATION Y	615-01 69/18/37 PARAMETER VALUE / UNISHTAINTY	PARAMETER VALUE +/ - UNIX ETATRITE	5	FARAMETER PARAMETER PARAMETER ALIE - / - UNICERTAINITY VALUE - / - UNICERTAINITY
TH-230 THALLIUM TIN TOTAL SOLIDS H URAHIUM VAHADIUM	FCIAL MGAL S MGAL MGAL MGAL MGAL	(0.095 +4700. 1.52 0.6	0.0 0.6 0.009 47200. 1.64 0.14	0.0 0.6 0.02 0.052 28200. 4.07		6 0.00 2350.0 0.184 0.16

STIE: SHIPPOOK 09/22/89 87 10/21/08 STIE: SHIPPOOK 09/28/85 10 04/22/89 REPORT DATE: 05/02/89

FORMATTON OF COMPLETIONS ALLUVIUM GRADIENT HYDRAULIC FLOU RELATIONSHIP: DOUR GRADIENT

			616-01 07/18/8/	-	A STATE OF THE PARTY OF THE PAR	2000	大学 の 日本		The second secon	
PARAMETER	HEASTIRE	VALUE ./	PARAMETER VALUE * / - UNICE RIAINIY		VALUE +/ URCERTAINTY	VALIR + / - INCL RTATHITY	VALUE - / - UNITERTATIVITY	THI	VALUE +/-UNCERTAINTY	ERTAINT
	CACOS	240		1	205.	423.	467.		387.	
AL THE PRICE		0	0.75		0.4		0.45		1.0.1	
AMMONTON	MEA	14.7	2		17.	400.	429.		120.	
ANTIMONY	M6/1	0	0.080		0.007		0.068		0.00	
ARCENIE	MG/I	0	6.00.0		0.01		0.013			
RARTIM	MG/L	0.	0.04		0.1		20.0			
BERYLL TUM	MG/L				0.01	4	****		0.01	
BORON	MG/L.	.0	9.32		6.3	9.0	0.63		, 0.30	
BROMIDE	MG/L	(0.1			0.1		0.1		0 000	41
CADMILLIM	MGAL	.0	0.005		0.004	100.0	0.003		430	0
CALCIUM	MG/L	514.			445.	352.	462.		.000	
CH OR IDE	HG/L	86.3	3		.59	92.	86.6		, , ,	
HEIMINE	MG/L	10.01	10		0.01		.0.0		0.00	
THE T	MG/L	(0.0)	10		9.05		10.01		2000	
CHADITYTANCE	INTRIO/CH	2450.			2600.	.0009	3400.		, 0000	
HPPFR	MGAL	10.01	10		0.02	9.04	20.0		20.00	
YAMIDE	MG/1				10.0				0.01	
THEFT	MG/L	0.42	2			£.3		-	300	707
SRUSS ALPHA	PCIAL	230.			480. 40.		360.	.00	*60	20.
HINSS BETA	PCIAL	200.	20.					30.	000	
IRON	MGAL	0.04	10		50.0	0.04	0.00		4 0.04	
FAD	MG/L	0	10		0.01	****	50.00		467.	
TAGHESTIM	MG/L	138.			7.86.	431.	26.5		5.42	
MARKANE SE	M6/1	•	1.93		3.34		20002		(0.0002	26
MERCHRY	W6/1	. 0	2000		0.04	0.3	0.00		10.01	
MUN YROF MUM	M6/A		0.01		0.00		10.00		*0.0	
MICKEL	M6/L				.0.0	63	7.52		20.	
MIRAIR	16/1	1 0 1					4.0.4		*	
MAN A MAN	100									
DEG CARRON	MG/1	0.22	0		87.48		120.		82.6	
78 - 240	PF173				0.0				9.0	0.8
		7.	7.00		7.09	7.05	58-9		6.93	
MOSPHATE	MG/I	0	45	E 17 17	1.0		0.98	-	1.0	
062-240	PC1/1	4.0	7.0 0.7		2.5 0.6		6.0	6.7	2.0	
POTASSTUM	MG/L	24.2				4	4.40		2/5	
84-276	PC1/1	0.1	1 0.2		0.0 0.4		0.4	2.0	0.0	
955-58	PCIAL	0					8.0	1.6	0.0	
STENTIN	MC/1	0	0.027		0.015	: 0.00.	0.077		10.01	
SILICA	HG/L	17.6	9		45.		1,71		.00	
SHUER	MG/L				0.01		200		746	
MITTOR	HG/1	366.			431.	1120.	6.00		5.3	
STERRITUM	M6/1	2.4	23		3.5	4700	4550.		4140.	
TIVINE.	MI,7	77.70			. 2320				1 0 1	
	The second secon	-								

GROWN WATER GIALITY DATA BY LOCATION SITE: SHIPBOCK 09/22/E9 REPORT DATE: 08/03/89

		616-01 07/18/8/	616-01 04/04/89	616-01 04/04/89 617-01 10/01/85 617-01 09/18/87 617-01 04/04/89	617-01 09/18/87	10-219	68/40/40
PARAMETER	MEASURE	PARAMETER		VALUE+/-UNCERTAINTY VALUE+/-UNCERTAINTY	PARAMETER VALUE +/ -UNCERTAINTY	VALUE +/-UNITERIATIV	ERIGINITY
TH-230 TIM TIM TOTAL SOLIDS URANTUM VANADTUM ZINC	PCT/L BG/L S BG/L S BG/L BG/L BG/L BG/L	6.3 0.8 6.075 3900. 0.433 0.07 0.064	4940. 9.06 9.06 9.06 9.06	7570. 0.509 0.4 0.039	0.0 0.9 0.036 24300. 0.355 0.12 0.009	6.0 0.01 6870. 0.373 0.07	5

SITE: SHIPPOUR 69722789
REPORT 5015: 08703789

FORMATION OF COMPLETION: ALLINITH HYDRAIR IC FLOU RELATIONSHIP: DOWN GRADIENT

PARAMETER		· · · · · · · · · · · · · · · · · · ·	中上日日日日日日日日日日日日日日日日日日日日日日日日日日日日日日日日日日日日	公司 湯湯 日本 日本 は 日 日 日 日 日 日 日 日 日 日 日 日 日 日 日 日	日本の日本の日本の日本の日本の日本の日本の日本の日本の日本の日本の日本の日本の日	東京は日本にはのはのは日本日本日本日本日本日本日本日本日本日本日本日本日本日本日本日本日本日
	MEASURE	VALUE + / - UNCERTAINTY	VALUE + / - UNCERTAINTY	VALUE+7-IBITERIAIBIY VALUE+7-UNITERIAIBIY	PARAMETER VALUE */ -UNITERIAINTY VALUE	VALUE - / - CNCERTAINTY
KAL LINE I T	MG/1 CACO3	3 400	400	700	4000	****
AL LIMITATION					*****	-00-
AMMONTUM	MG/L	130.	110.		400	
ANTIMONY	MG/L					
ARSENIC	MGAL				1	•
BARTUM	MG/L					
BERYLLIUM	MGAL				4	
BORDN	MG/L	6.0	9.8		2 0	7.0
BROMIDE	M6/L					0:0
CADMIUM	MG/L	0.001	(0.001		, 00 00	, 0000
CALCTUM	MGAL	364.	345.		384.	305.
CHI DRIDE	MGAL	.88	87.		-00	
CHROMIUM	MGAL				: 1	: "
COBALT	MG/L					
COMPUNITANCE	HIMHO/CH	7000.	7000.		7000	7000
COPPER	MGAL	0.04	0.03		0.04	0.0
CYANIDE	MG/L		4			
F1 110R 1DE	MG/L	1.9	4.9		1.8	1.8
GROSS ALPHA	PCIAL					
CHUISS BEID	MEIN					
LKON	1671	0.04	20.00		0.02	0.05
MACRECTUM	Me/L					
MANGANECE	#E/4	307.	476.		537.	.065
HE DETHEY	MG/L	6.4	6.11		26.85	5.71
MIN YRDENIM	MG/1	0.3	4 0			
MICKEL	MG/L				•:-	6.9
NITRATE	MG/L	75.	47.		60	000
WIFFITE	MGAL					
HD2 & ND3	MGAL					
DRG. CARBON	MGAL					
012-540	PCIAL					
PHOCOUATE		6.74	6.94		6.94	6.94
240	PC1./1					
POTACCTUM	MC 24					
PA-224	119/L	7.07	5.69		69.7	4.89
RA-228	PCIA					
SELEMENT	MG/1	5 0 005	2000			
STITEA	M:/I	50000	6.5003		\$60.0	500.0
SHURR	FIG/1		1			
SOBJUM	W.M.	1080.	1500.		450	00.00
CTRONING	M6/1					1930.
SIN FAST	H5.7	.0.05	5450.	5 189.	3770.	5070.
II MPT DATHER	F - Permer	1				
	The state of				ж.	20.

GROBED MATER BRALITY DATA BY LOCATION SITE: SHIPROCK 09/28/85 TO 04/22/89 REPORT DATE: 08/93/89

		648-01 10/01/85	618 02 10/01/85	4 ID - SAMPLE ID AND L 618-03 10/01/85	618 02 10/01/85 618-03 10/01/85 618-04 10/01/85 615-05 10/01/85	88710701 50-519
PARAMETER	UNIT OF	PARAMETER VALUE • / - UNICERTATRITY	PARAMETER PARAMETER VALUE + / UNCERTAINTY	PARAMETER -/ UNITETATINTY VALUE -/ UNITETATINTY	PARAMETER VALUE +/ UNCERTAINTY	PARAMETER VALUE * / - UNITERTAINTY
Ти-230	1/134					
THAI LILIM	MC/1					
TIN	M6/1	0.005	(0.005	0,005	\$ 0.005	500.0
TOTAL COLTDS	HE/I	8430.	.0608	8070.	8050.	8070-
IRANIIM	MG/I	0.548	0.712	0.703	0.602	0.611
VANADIUM	MG/L	6.5	9.0	1.0	9.0	0.6
ZTNC	MGAL	0.034	0.03	0.026	820.0	0.024

STIE: SHIPROCK 04/22/89 87.00 09/28/85 10 04/22/89 8FPORT DATE: 08/03/89

FORMATION OF COMPLETION: ALLIGITUM GRADIEUT HYDRAULIC FLOU RELATIONSHIP: DOUR GRADIEUT

ALKALINITY ALKALINITY ALUMINUM AMEGNIUM ANTIMONY ARSENIC BARTUM BERVILLIUM BERVILLIUM CALCIUM CALCIUM	URIT OF MEASURE	PAPANE IS B							
KALINITY UMINUM UMINUM UMINUM UMINUM SENIC		VALUE +/ - UNICE RIAINTY	AINTY	PAROMETER UALIE*/ UNCERTAINTY	PARAMETER UNI UE + / - HRUS PIAINTY	PARAMETER VALIE +/UMERTATHEY	THIY	PARAMETER UM: UE . / - UNITERTAINTY	TAINT
UNINUM FEDMICH III MONY SENIC RIUM RON OMIDE OMIUM LCIUM	MGAL CACOS	344.		340.	950.	778.		778.	
FONTON TIMONY SENIC RIUM PYLLIUM PONTON ONTON LCTUM	MG/L	0.74				1.15		0.53	
TIMONY SENIC RIUM PYLLIUM RON OMIDE DATUM LCTUM	MG/L	424.		110.	43.	63.9		80.	
SENIC RIUM PYLLIUM RON OMIDE DMIUM LCTUM	MG/L	0.042		0.0.0		0.084		0.045	
RIUM RON OMIDE DATUM LCIUM	MG/L	900.0		0.03		0.053		0.053	
PYLL TUM RON OM TOF OM TUM LCTUM	MG/L	0.03		1.0)		0.03		0.02	
ADN OMTOF DATUM LCTUM	MG/A.								
DATUM CCTUM CORTOE	MG/L	0.65			18.	4.49		1.41	
CTUM	MGAL	1.0)				0.0		0.1	
CTUM	HG/L	4 0.005		0.004	(0.001	500-0		0.005	
ORIDE	MGAL	474.		445.	437.	490.		486.	
The same of the sa	MG/L	63.9		85.	720.	552.		585.	
CHROMILIE	MG/I	4 0.01		0.45		10.00		10.01	
COBALT	MG/L	10.00		(0.05		0.04		6.04	
COMPRETANCE	MHO/CH	3490.		4900	25,000.	5700-		5700.	
COPPER	MG/L	90.0		4 0.02	0.4	0.40		0.0	
CYANIDE	MG/L								
FLUORIDE	MG/L	0.73			**	0.38		6.38	
GROSS ALPHA	PCIAL	350.	20.	240. 50.			300.	870.	240.
GRIDSS BETA	PETA	270.	30.				100	1200.	100.
IRON	MG/L	10.0)		0.11	0.45	10.00		10.00	
FAD	MGAL	0.01		10.00		6.03		20.0	
MANICANI CE	MEA.	461.		474.	1206.	1859.		1985.	
ME RETHRY	MG/I	0 0000		0 0000	3.16	1 0 0003		8.02	
MIN YRDE MIN	MG/1	0.01		6.40	0.27	20005		0 0 0	
MICKEL	MGAL	(0.0)				0.01		0.03	
MITRATE	MGAL	42.0		27.	730.	1550.		1520.	
MITRITE	MGAL	1.0)				1.0).		1.0)	
NO2 & NO3	MGAL			6.4					
ORG. CARBON	MG/L	100.				240.		240.	
6 10	reive .								
- H	200	6.83		6.83	7.26	96.99		96.9	
PG-340	DC 1 /2	0.00		1.0		1.22		0.78	
TIASSETTIM	MC/4	40.04	1.0	* **		1.3	1.1		
RA-224	1/134	0.0	* 0	0.70	101.	407.		118.	•
RA 279	PFIA		0.0	2.0		0.0		0.0	
SELENTING.	MC/1	0.004		0.00	2000	0.5	1.0	0.0	
SHITCA	MGA	17.2		0.000	0.003	44.7		0.350	
SHURR	MG/L			6-62		,,,,,,			
HOH GID:	MG/1	550.		524.	7260.	3675.		3275.	
STROWTION	MG/L	2.3		4.5		59.4		9.80	
710 - 011	14:71	4270.		3350	12700.	12160.		12300.	
THE LESS TRACT	F Droper	1000				1.0		1.0	

SHE: SHERRORK 05/28/65 TO 04/22/89 REPORT DATE: 08/03/89

ARAMETER	UNIT OF HEASURE	PARAMETER URL 1/ - URICLE LA LINTY	PARAMETER VALUE + 7 - UNICERTAINTY U	PARAMETER VALUE + 7 - UNCERTAINTY	PARAMETER PARAMETER PARAMETER PARAMETER PARAMETER VALUE +/ - UNITE PARAMETER VALUE -/ - UNITE VALUE -/ - UNITE VALUE -/ - UNITE VALUE -/ - UNITE VALUE -/ -	PARAMETER UALIE +/ - UNCERTAINT	ETER ERIAINIY
TH-230 THALLIUM TIN TIN TOTAL SOLIDS URGATION VANADIUM	2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1	9.3 6.8 0.033 9346. 0.445	5930.	6.5 4 0.005 37600. 3.05 0.6	2.4 1.6 0.054 27900. 2.34 0.27	1.8 1.6 0.045 24700. 2.34 0.47	3

SITE: SHIFROW.

99728785 TO 04722789

REFORT DATE: 08703785

UNIT OF UNIT OF ALKALINITY MGAL CACOS ALUMINUM MGAL AMMONIUM MGAL AMSENIC MGAL BARIUM MGAL BERYLLIUM MGAL BORON MGAL CANTINE MGAL CANTON MGAL CONDUNCTANCE UMHOCH	PARAMETER VALUE*/-UNCERTAINITY 778. 0.54 90.3 0.077 0.038 0.02	THIY	DADAME TER		- BABABA					
7 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	778. 90.3 90.3 90.07 90.03 90.02		VALUE +/ - UNITERTAJUTY	THE	VALUE + / - UNCERTAINTY	TAINTY	VALUE + / - PHOLE LAINTY	RIMINTY	VALUE . / -U	VALUE * / - UNIXERTAINT
	90.3 90.3 90.3 90.02 1.37		778.	-	770		4240		*****	
. 5	90.3 0.077 0.038 0.02 - -		0.50		05.0		,00.4		1160.	
. 5	0.077		.08		80.		84.		**	
. 5	0.038		0.119		0.477		0.047			
. 5	4.37		0.035		0.043		0.05			
. 5	1.37		0.02		0.05		100			
ğ	1.37						10.01		*	
100	0.1		1.36		1.43		0.0			
100	* * * * *		0.4		0.1		0.4			
þ	6.003		(0.005		(0.005		0.020		,	*00
<u> </u>	.180.		484.		484.		479.		AKK	
100	528.		515.		540.		800		200	
	0.01		10.00		10.01		10.00			
**	10.0		10.0)		20.0		(6.05		*	
	5700.		5700.		5790.		12500.		13000.	
	0.02		0.02		20.0		90.0		6.07	21
							10.01			
			91		0.37		6.3		8.7	
CBOSS OFTA PCIAL	676.	200.		200.	1400.	200.	2700.	300.	4	
	**	.001		100.	1100.	100	1100.	.004	*	
	0 03		0.03		0.01		0.47		0.4	
STUM	4724.		446.		47.70		20.0			
MANGANE SE MG/L	7.66		7.47		H.03		0 45		1660.	
MFRCURY MG/L	(0.0002		0.0002		6.6963		(0.0002			
E MINE	10.0		(0.01		10.00		10.01			*
	0.01		0.01		10.01		40.00		A DANS	
MITEUR MS/L	1510.		1580.		1510.		1600.		700.	
MILET E MICH MC/L	0.1		1.0		1.0)					
200	200		, ,,,,,,						*	
0			50,3		240.		29.3	1		
	Y 0 Y		7 07				8.	6.7		
PHOSPHATE MGAL	0.ER		4.24		6.76		6.94		6.8	0
	1.8	1.7					1.0		*	
LINE	109.		107	7-1	***	***	9.0	9.0		
RA-224 PET/IL	0.2	0.7	0.0		. 0	0 0			80.1	
	1.1	1.2	0.0	4.4	**	2.0	0.0	0.0		
	0.362		6.339		0.344		0.654		,	
	13.8		13.9		14.4		42.		0.0	50
							10.01			
Subtum #6/L	2810.		2759.		2831.		3546.		3290.	
STRUGGLEUM MG/L	43.00		04.6		95.6		8.01			
	. 12.009.		12400.		12200.		15000.		10000	
THEF	20.		30.00		0.1		1.0			

SITE: SHEPBOCK 09/25/89 REPORT DATE: 08/03/89

		619-03 09/19/07	619-04 09/19/87	619-65 09/19/87	(D)	620-01 19/02/85
PARAMETER	UNIT REMEMBE	PARAMETER UALUE + / - UNICE RTAINTY		PARAMETER UALUE + / UNICERTAINTY	PARAMETER VALUE +/ INCERTAINTY VALUE +/- UNITED INTERIALITY VALUE +/- UNITED INTY	PARAMETER VALUE +/-UNITRIAINTY
TH-230 THALLTUM TIN TOTAL SOLIDS URANIUM VANADIUM ZINC	7017 1677 1677 1677 1677 1677	0.0 1.1 0.042 22400. 2.16 0.16	1.0 1.3 0.044 72400. 2.23 0.16 0.075	4.3 4.5 9.040 22200. 2.34 0.46	6.3 6.8 9.02 0.049 26360. 3.44 0.468	49200. 49200. 49200. 6.4

STIL: SHIPPOCK 99/28/85 TO 04/22/89 RFPORT DATE: 05/03/69

		· · · · · · · · · · · · · · · · · · ·		大大は日本の日の日の日の日本の日本の日本の日本の日本の日本の日本の日本の日本の日本の日	大田田 大田田田田田田田田田田田田田田田田田田田田田田田田田田田田田田田田田	The second second second			050 05 04/03/04		66-039	04/05/83
PARAMETER	UNIT OF MEASURE	PARAMETER VALUE * / - UNCERTATHITY	ER	PARAMITE VALUE +/-URUERIALHIY	TIBIL	PARAMETER VALUE • / - URESETATIONS	TER	VALL	PANAMETER		PARAMETER UNLUE +7 - UNCERTAINT	FREATHE
ALKAL INTTY	MS/L CACO3	4172.0		1405.		1145.			1448	1	4446	
ALUMINUM ALUMINUM	MG/L	0.3		0.51		1.0)		+	0.4	-	. 0	
AMMONTUM	MG/L	18.0		11.2		7.6			2.5		2.4	
ANTIMONY	MG/L	(0.003		0.205		0.076			0.039		0.038	
APSENIC	MG/L	10.01		0.049		0.04			0.05		0.05	
BARIUM	MG/L	0.0		0.01		1.0		,	. 0	,	. 0	
RERYLLIUM	MG/L					10.0			0.04		0.04	
BURCH	MG/L	9.0		1.09		0.8			8.0		0.7	
BROMIDE	MG/L			(0.1		0.2			4.0		0.0	
CADMIUM	MG/L	100.00		6.005		0.045			0.044		0.043	
CALCTUM	MG/L	580.		549.		374.			374.		344	
CHLORIDE	MG/L	750.0		719.		640.			456.		450	
CHROMIUM	MGAL	0.11		10.01		10.00		,	0.04	,	0.0	
COBALT	MG/L	0.27		0.62		(0.05			0.00		0 00	
CONDUCTANCE	M3/0HM0	14000.0		9500.		75.00			7500		7500	
COPPER	MGAL	0.00		0.05		0.03			0.03		0 03	
CYANIDE	MGAL	10.01				10.0		,	0.04	*	5 6 6	
FLUORIDE	MG/L	0.4		0.20		0.3			0.3		6.3	
GROSS ALPHA	PCIAL	*			100	920	400		780. 470.		040	400
GROSS BETA	PCIAL				200.	610.	70.				.055	70.
IRON	MGAL	0.21		10		0.44			2		0.45	
FAD	MG/L	10.0		0.04		10.00			0.01	,	0.04	
TAGMESTUM	M6/L	0.0861		.0864		4480.			1490.		1500.	
MANUANE SE	M6/L	8.80		6.53		3,45			3.44		3.32	
THE RELIEF	M6/L	20005		6.0003		2000-0		*	0.0002	~	0.0002	2
MIN TRUE NOT	MS/L	0.13		0.03		10.01			0.04		0.01	
WITDATE	#67E	0.00		0.00		10.0			90.0		0.07	
WITRITE	MG/1	. 0 .		, 0 ,		3.3%			*00*		350.	
192 a 1103	MEAL											
ORG. CARBON	MGAL	290.		345.		40.4			24.7		424	
PB-210	PCIAL	2.8	1.2			6.9	+ 3		0.	0		•
	. as	6.83		4.77		A. 87					4 67	•
PHOSPHATE	MGAL	1.0)		0.42		1.0)			0.4	*	0.0	
PB-240	PCIAL	2,3	4.5	1.4	2.4	6.0	0.7		2.7 0.0		200	0
POTASSIUM	MG/L	106.0		81.5		71.4			71.4		KB. 3	
RA-226	PCIAL	0.0	0.3	0.0	0.4	0.0	0.2		0.0		0.0	0
RA-228	PCIAL	0.7	1.1	6.0	1.3	0.0	0.0		0.4 4.0	0	6.3	1.0
SELFRIUM	M6/1	0.020		0.361		0.346			25		0.3CR	
SHIEA	M6/1	.9		12.3							11.	
S II WE K	M6/1	10.01				10.0		*	0.01	*	9.04	
CIDINITION	M6/1	37.20.0		3584.		2490.		**	2530.		2540.	
SHIPAIF	HE./1	2.74		14.0		2.2			6.3		4.4	
THE LIST	MC./1	4 4 4		14000		10.000			9669		192.00.	
And the same of the same of												

STITE SHEPBORK
09/20/ES TO 06/20/89
REPORT DATE: 08/03/89

PARAMETER	UNIT OF NEASURE	PARAMETER VALUE -/ -UNICERTATUTY	PARAMETER PARAME	PARAMETER UMUSE -/ - URICE RIMERTY	PARAMETER UNUSE +/ - LINE RIAIRIY UNI UE +/ - UNCERTAINTY	PARAMETER UALLIE + / - UNCER - ATMITY
н-230	PCIAL	1.0 2.8	0.2 1.1	0.0	0.0	0.0
HALLIUM	MGAL			0.02	0.02	0.02
IN	MG/L	0.060	1.03	0.007	(0.605	0.009
DIAL SOLID	NS MG/L	26600.0	24400.	17300.	17300.	17300.
RANIUM	1/914	2.34	2.44	4.60	1.53	1.62
UNHADIUM H	MGAL	0.23	0.46	6.12	6.12	0.12
TMC	M6/1	0.404	0.038	0.054	0.059	0.049

STITE SHIPPOUX

92728285 TO 06722739

REPORT DATE: 08/03/69

FORMATION OF CONPLETIONS ALLUVIUM GRADIENT HYDRAM IC FLOU RELATIONSHIPS DOWN GRADIENT

				日本 日	日本 日	· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·			20110110
PARAMETER	UNIT OF MEASURE	UAL	PARAMETER UALUE+/-UMCERTAINTY	YALUE +/	ARASH TER URCYRTAINTY	PARAMETER VALUE +/- UNITE TAINTY	PARAMETER	THI	PARATETER	TAINI
AI KAI INTIY	MS/1 CACUS		1168	3711	Marin State of State	600.1	A COUNTY OF		*****	-
AL UM FAUTH			0.4	4.0 9.4			0.3		13/0.	
AMMONTON	MG/L		2.5	2.5		13.	43.0		0.6	
ANTIMONY	HG/L		0.038	60.039			6 0.003		0.705	
ARST NIC	M6.7.		0.04	50.05			10.00		0.044	
BARTIM	#67L	,	0.1	(0.1			1.0		9.04	
BERYLL TUM	MG/L		10.0	10.00						
BORON	MGAL		0.7	0.8		1.4	0.3		1.08	
BROHIDE	MGAL		0.4	0.2					9.2	
CADMIUM	MGAL		0.017	0.01		0.001	160-0		6.063	
CAI CTUM	MGAL		366.	376.		417.	562.		547.	
THE OR IDE	MGAL		450.	650.		400.	710.0		732	
CHROMIUM	MG/L	,	9.04	10.01			0.44		10.01	
DEM.T	MG/L	,	0.05	(0.05			0.23		0.02	
CONDUCTANCE	UMHO/CH	2	.200.	7500.		10000	10000.0		10800	
COPPER	MGAL		0.03	6.03		0.66	6.03		0.04	
YANIDE	ME/L.	,	0.01	10.01			10.01			
1 110P 10E	MG/A.			6.3		7.5	C.3		02.0	
GRIDSS ALPHA	7/134	7		1200.	14				2000.	300.
SKUSS BEIG	PEIA		880.	260.	86.				1100.	200.
KIN	m6/L	,	0.45	0.45		0.07	0.20		10.01	
HACHESTER	MC/I	,	10.01	10.00			60.00		0.03	
TANGANESE	MG/I		3 40	3 50		610.	1890.0		2142.	
TERCHRY	MG/L	*	0.0002	0.000	-	7	6 0 0002		0 00003	
TOT YRDENIE	M6/1	,	0.01	10.00		0.4	0.45		0.00	
MTCKEL	MG/L		0.07	0.07			9.22		0.05	
MITRATE	MG/L		326.	339.		700.	2100.0		1200.	
MITRITE	MG/L						4.0.4		1.0)	
MOZ & MO3	MG/L									
DO 340	me/L			19			260.		344.	
6.10	Call		4 67	0.0	1.1		3.9	1.3		
PHOSPHATE	MGAL	*	0.1	100		0.71	28-9		6.63	
PU 240	PCIAL		3.0 0.9	*	0.0		200	*	0.01	•
PUTASSTUR	MG/L			77.1		44.4	440.0	2.1	9.0	
RA-226	PCIAL		0.3 0.3	0	0.7		0.3	* 0	0.00	c
872-VB	PEIA			0	0.8		9.6	6.0	0.7	***
SFLENIUM	MEA		0.314	0.36		(0.005	0.023		0.379	
111114	M6/L						1.		12.3	
1111	1,07		6.91	10.01			10.00			
CTRONTIUM	MC 7		7.529.	.270		2770.	3.20.0		3738.	
SHIAIF	m./	*	10.00.	5.5.5. Sec. 7.5.5.		2000	10.00		5.4	
CHILDE	MG/7	*	. 0				6-64634		14/00.	
The paper is it with the										

GROUSED MATER DUST ITY DATA BY LOCATION SITE: SHEPROCK 09728/85, TO 04722/89 REPORT DATE: 08/03/89

PARAMETER	UNIT OF MEASURE	620-64 64/05/89 PARAMETER UALUE+/-UMCERTARHITY	,	FARAMETER VALUE -/ -/ UNICETAINTY	FARAMETER VALUE -/	FARAMETER UALUE -/ UNCERTAINTY
TH-230 THALLIUM TIN TOTAL SOLIDS URANIUM ZINC	PCIAL MGA MGA MGA MGA MGA MGA MGA	0.2 0.02 0.008 17400. 1.64 0.12	0.0 0.02 0.007 47209. 1.60 0.12 0.054	15890. 15890. 1.31 0.47	6.0 2.2 6.060 25400.0 233 6.26	4.0 2.4 25000. 2.49 0.046

STITE: CHEPROCK.
99728785 TO 64/22759
REPORT DATE: 05/03/8*

PARAMETER PARA	· · · · · · · · · · · · · · · · · · ·	日本日日本日本日本日本日日日日日日日日日日日日日日日日日日日日日日日日日	· · · · · · · · · · · · · · · · · · ·
TY MGAL CACO3 924. 964.	UR +/ UNITPIAINTY VALUE +/ UNCERTAINTY	VALUE + Z - UNITER INTER	VALUE . / - UNCERTAINTY
MISAL 11. 17. 17. 18.0. 18	976	976	
MGAL 1.4 1.6 1.4 1.6 1.4 1.6			
H6AL 1.4 1.4 1.4 1.4 1.5 1.4 1.5 1.4 1.5 1.4 1.5	17.	**	
HEAL 1.4			
HEAL 6.001 (0.001 (1.4 HEAL 5.84. B). B. C. OO (1.4 HEAL 5.84. B). B. C. OO (1.4 HEAL 5.80. B). B. C. OO (1.4 HEAL 5.80. B). B. C. OO (1.4 HEAL 5.30. B). B. C. OO (1.4 HEAL 5.30. B). C. OO (1.4 HEAL 5.3			*
HEAL 0.8 1.4 HEAL 5.64. 5.75. HEAL 5.84. 5.75. HEAL 5.80. 5.70. HEAL 6.07 0.09 HEAL 6.07 0.09 HEAL 6.01 0.00 HEAL 6.01 0.01 HEAL 6.01 0.02 HEAL 810. 1100. HEAL 90.6 817.7 HEAL 90.6 4179. HEAL 90.6 4179. HEAL 10.00			*
HEAL 0.8 4.4 HEAL 5.40 6.001 HEAL 5.40 6.001 HEAL 5.80 5.70 HEAL 5.80 6.00 HEAL 5.80 6.00 HEAL 6.00 HEAL 6.00 6.00 HEAL		4	
HSAL			
H6AL SA4. 475. 570. 475. 570. 475. 570. 475. 570. 475. 570. 475. 570.			
FIGAL 554. 475. FIGAL 580. 570. FIGAL 580. 570. FIGAL 580. 570. FIGAL 580. 570. FIGAL 6.07 6.09 FIGAL 6.07 6.00 FIGAL 6.01 6.00 FIGAL 6.01 6.00 FIGAL 6.01 6.02 FIGAL 6.01 6.02 FIGAL 6.00 6.02 FIGAL 6.00 6.00 FIGA		10000	, 0000
1500 1500		44.5	428
NEAL 12000. 120		2200	2200
HEAL 12000. 120			
Umh0/Cr			•
MGAL 0.09 0.09 0.09 0.09 0.09 0.00	12000.	12000	42000
MGAL 12. 9. 12.	0.09	0.00	0 00
NEAL 12. 9. NEAL 10. 9. NEAL			
PCIAL	9.2	7.0	2.0
FC1/L 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.15 0.25			
HGAL 1280. 1080.		*	
HEAL 1280. 1080. 3.59	0.1	0.1	1.0
SE MGA (286. 1086. 3.59 3.59 3.59 3.59 3.59 3.59 3.59 3.5			
NUM NGA 2.39 3.59 NUM NGA (0.01 0.2 NUM NGA (0.01 0.2 NUM NGA (0.00 0.00 NUM NGA (0.00 0.00 0.00 NUM NGA (0.00 0.00 0.00 NUM NGA (0.00 0.00 0.00 0.00 NUM NUM NUM NUM NUM NUM NUM NUM NUM NUM NUM NUM NU	1080.	1050.	1540.
NUM MEAL (0.01 0.2 100. 100. 100. 100. 100. 100.	3.59	3.58	3.66
#674 816. #100. #1			
#67. 816. 1100. 11	2.0	5.6	6.2
#67.	2007		
03 MG/L RBON MG/L SU TE MG/L TE MG/	1100.	1100.	150.
REON MS/L FCI/L SU TE MG/L FCI/L PCI/L			
FCLAL 7.04 7.04 7.04 7.04 1.004 1.004 1.004 1.004 1.004 1.004 1.004 1.004 1.004 1.004 1.004 1.000 1.004 1.000 1.004 1.000 1.004 1.000 1.004 1.000 1.004 1.00			
11 15 1.04 7.04			,
FC1/L 90.6 87.7 FC1/L 90.6 87.7	7.04	7.04	7.04
FCLAL 90.6 87.7 FCLAL 90.6 87.7 FCLAL 0.005 (0.005 (1854			
M M6/L 90.6 87.7 PCI/L PCI/L MCA 0.006 (0.005 (M6/L 3200. 445		A	
FCIAL 0.005 (0.005 (FCIAL 0.005 (0.005 (FCIAL 0.005 (87.7	83.2	45.4
H H6AL 0.006 (0.005 (1.005 (
H H6AL 0.006 (0.005 (1.005 (
MSA 3200. 4190. 11890. 1554 1550. 1554 1550. 1554 1554 1554 1555. 1554 1556. 1555	6.005 (6.005	4 0.005	6 9.005
HEAL 3200. 4190. HEAL 10906. 11690. KSA 1050.			
UM MS/1 3200. 4159. MS/1 10906. 11690. KS/1 1750.			
1624 1990c. 11990. KSA 1890.	4199.	5240.	4720.
1100 C - Dicage 47 - 5	Acres .		
THE C - DEGREE 42.5	11000.	11600.	11660.
	***		***

GROWN DATER DISM TTY DATA BY LOCATION SITE: SHIPROCK 09772/85 TO 04777/89 REPORT DATE: 08/03/89

	UNIT OF	622-01 10/02/85 PARAMETER	622-92 19/62/85 PARAMETER	622-03 10/02/85 PARAMETER	622-02 10/62/85 622-03 10/02/85 622-04 10/02/85 622-05 10/02/85 PARAMETER PARAMETER PARAMETER	622-05 10/02/85 PARAMETER
TH-230	PC1/L	VALUE / - UNCERTAINTY	VALUE A THICK REALINEY	VALUE */ UNICE TATULY	UNITE +/ UNCERTAINTY UNITE +/-UNCERTAINTY UNITE +/-UNCERTAINTY UNITE +/-UNCERTAINTY	UALIE . / - UNCERTAINTY
TOTAL SOLIDS INRAMIUM	767 767 767	19900-	20300.	200005	20000	20200.
VARABIUM	MG/L MG/L	0.5	0.84	0.6	0.434	0.45

SITE: SHIPROCK 09728/85 TO 04/22/89 REPORT DATE: 05/03/89

PARAMETER			Name and Address of the Owner,	日本日日日日日日日日日日日日日日日日日日日日日日日日日日日日日日日日日日日	THE RESERVE THE PERSON NAMED IN COLUMN 2 I		
*****	UNIT OF	PARAMETER UALUE+/-UMCERTAINTY	TAINIY	PARAMETER VALUE +/-UNCERTAINTY	PARAMETER VALUE + 7 - UNICERTATNITY	PARAMETER VALUE +7 - UNICERTAINTY	PARAMETER UALUE+/-UNCERTAINTY
KING THEFT !	MG/L CACG3	1466.0		1666.	739.	995.	240
AL UM I MILIM	HE/L	4.0		0.54		0.49	
MMINOMINE	MGA	45.0		40.3	.06	47.7	110.
ANTIMONY	HGA.	0.003		0.726		0.488	
PRSENIC	F6A	0.01		6.059		970.0	
BARIUM	MGAL	0.4		20.02		0.05	
RERYLLIUM	m6/L						
BURDN	m6/L	0.3		1.21	0.9	1.12	1.6
BROWIDE	MGAL			0.3		0.2	
CADMIUM	MG/L	100.00		0.005	100.00)	500.0	100.00)
Cal Cium	M6/L	540.		594.	545.	535.	524.
CHECKETON	T6/L	730.0		817.	530.	634.	.009
Cook I	TIG/L	0.00		10.01		10.0	
COMPRETANCE	TOTAL STATE	10350		10.01		0.04	
COPPED	MEAN CH	10/20.0		7000.	13009.	11500.	15500.
CYANINE	MG/I			0.0	6.03	6.03	90.0
EL HEBT DE	MC/1			***			
CRUSS ALPHA	-			h	10.	9.54	.0+
GROSS BETA	-			1300. 360.		1600. 300.	
IRON	M6/L	0.20		*	6.42	1 0 04	0 0
LEAD	MG/L	10.01		0.03		0.03	2
ANGHE STUR	MG/L	1570.0		2305.	4020.	4709.	1310.
TONGUNE SE	MG/L	3.71		4.37	90.9	7.98	6.33
TE RCURY	W6/L	20005		0,0003		0.0002	
HOL YBDENUM	HG/L	0.13		80.0	10.0 >	10.0	10.00
MITTER	MO/L	12.0		90.0		0.03	
MITRITE	MG/L	0.0047		. 660.	940.	1770.	1200.
MILE & NITE	MEA			0.1		1.0	
ORG. CARBON		230.		53.2			
PB-210	PCIAL	3.4	1.3			*3057	
	. 95	68.9		6.80	6.97	4.83	7. 37
PHOSPHATE	HG/L	1.0)		0.74		0.47	20.0
012-04	PCIAL	2.3	4.5			7.4 4.7	
POTASSIUM	MG/L	124.0		92.0	111.	405.	***
RA-226	PCIAL	6.4	4.0	0.4 0.4			•
RA-728	PCIAL	6.0	1.0	1.7 1.6		7.1 1.8	
SELENIUM	MEZI	0.041		0,395	969-0		0.006
SHILLS	M6/L	8.		16.1		16.3	
CONTINE	MC /4	10.0					
STECHETISM	M6/4.	3709.0		1/5k.	3230.	3348.	3430.
SHEFAIL	F6:71	40700 0		5.50	-	42.0	
CHE FIRE	MC/1	, 00		143,000	10000	12466.	11500.
II MPT RATURE	C - 14 GPUF	21.0		****	. 0.	1	2.02

STIE: SHIPPOCK
O9722/C; TO 04/22/R9
REPORT DAIL: 03/03/29

PARAMETER	UPTT OF MEASURE	VALUE */ -UNCEPTAINTY		PARAMETER VALIR -7 - 1863 FTAIRTY	PARAMETER	PARAMETER UALUE + / - UNCERTAINTY
TH-230 THALLIUM TIN TOTAL SALIDS URANIUM VANADIUM ZINC	777775	2.0 3.4 0.059 22400.0 2.50 0.274	4.2 2.2 4.49 26000. 3.07 9.47	(0.005 18400. 1.44 0.8	0.2 1.1 1.03 72400.	20700.

STIE: SHIPBOCK 09728/05 10 04/22/09 PLFORT DATE: 05/03/09

PARAMETER AL KAL INITY AL UMINUM AMMONTUM AMMONTUM		The same of the sa	The state of the s			THE RESERVE AND ADDRESS OF THE PARTY OF THE
AL INITY MINUM DATUM	UNIT OF HEASURE	PARALETER VALUE+/-URCEETAINTY	PARAMITER	PARAMETER VALUE */ - UNIX. RIAINTY	PARAMETER VALUE + / - UNUS RIAISITY	PARAMETER VALUE + 7 - SPECERTAINT)
DMINH	MG/L CAC03	879.0	.096	4374.	726.	1091.
THOMY	MG/L	6.3	0.51	4 0.4		0.50
IMUNY	MG/L	15.0	71.	.22	46.	42.6
A Property	MGAL	(0.003	0.162	0.036	*	0.174
ARSENIC	M6/L	(0.01	0.0.6	20.0		0.052
BARTUM	MG/L.	1.0)	0.02	1.0)	*	0.02
BERYLL IIIM	HG/L			(6.01		
RORON	MG/L	6.3	1.05	0.7	6.9	1.10
BROWIDE	MG/L.		(0.1	0.4		1 0 1
CADMIUM	MG/L	(0.001	(0.605	0.913	(0.001	(0.005
CALCTUM	MGAL	.850.	556.	382.	520.	543.
CHI OR IDE	MG.1.	750.0	658.	730.	530.	646.
CHROMIUM	#67L	0.10	0.01	(0.01		10.00)
COBALT	MG/L.	0.19	(0.01	(0.05		0.01
COMPUCTANCE	UMH0/CH	41000.0	10200.	11000.	12500.	41200.
CUPPER	MGAL	90.08	0.02	0.03	0.07	0.0
CYANIDE	MG/L	(0.01		(0.01		
F. DORIDE	MGAL	0.3	50	6.3	.04	
GROSS ALPHA	PCIAL					#500. 30n.
1000	PCIA.	: ,	1100.	E40. 110.		
I KUM	11,71	0.16	6.04	1.01	1.0	10.0
WCONFOTHIN	167	10.00		26.05		0.03
ModE ONE CE	MG/1	1300.0	0 **	1,00	1110.	1736.
MERCHRY	MG/1	6 0.0007	0.0002	20000	3.13	00000
WHY YRDE MITH	MG/I	0.43	, 000	, 000	, ,	0.000
MICKEL	MGAL	0.45	20.0	4 0.04		0.02
MISSETT	MG/L	2500.0	7770.	950	890	6420
UTTRITE	"SA	(0.1	(0.1	The state of the s		.0.1
MO2 & NO3	m6/L					
ORG. CARBON	MGAL	250.	268.	34.5		42.7
PB-240	PULL	2.7 1.0		6.9 4.3		
	. AS		6.82	6.93	7.42	4.84
HUSPHATE	HG.	1.0)	6.64	1.0 >		0.79
012.00	PCIA.	0.5	1.1 1.4	1.0 9.0		2.0
POTASSIUM	1/34		97.5	113.	409.	100.
84-226	PCIA	0.5 0.4	0.0	0.0 0.4		
67.8	FEIA		1.3 0.9			1.1
Carlo marine	H6/1	0.011	9/6-0	6.3814	6.696	
CTI UKD	MEA.		15.8			17.0
CODINE	107.1	10.00		10.0		
STRONTIUM	M6.71	30.0.0		7246.	3939.	3325.
311 1 0 11	Mc/l	40700 0	0.51	40.0		6.0
SHETDE	MC/I	0.0000	17.60	13500	19190.	12300.
THEFT PATHET	f turing	0 00	1,7	1		1.0

GFORMS WATER OFFICE BATG BY LOCATION SITE: SHIPRONY 097/28/85 TO 04/22/89 REPORT DATE: 08/03/39

FORMATION OF CONPLETION: ALLUVIUM GRADIENT HYDRAULTS FLOU RELATIONSHIP: DOUR GRADIENT

	INIT OF	624-01 09/18/86 PARAMITER			674-04 99/04/87 674-04 64/04/89 625-04 40/03/85 625-04 09/03/87	28/60/60 10-529
PARAMETER	MEASURE	VALUE + / - UNICE PTATHEY	VAI 101 +	VALUE +/ BRUYELTAINTY	VALUE +/ SHILERIAINTY VALUE +/ -UNICERTAINTY VALUE +/ -UNCERTAINTY	VALUE + / - UNCERTAINTY
TH-230 THALLTUM TIN TOTAL SOLIDS URANTUM VANADTUM ZINC	8 1677 1677 1677 1677 1677 1677	4.0 2.P 0.040 22400.0 1.34 0.28 0.055	1.1 1.4 1.32 23700. 1.84 0.15 0.00.	0.0 0.01 0.014 22700. 2.57 0.005	(0.005 18400. 1.44 0.55	2.0 1.7 22600.

STILE SHIPPORE 04/22/59 TO 04/22/59 PEPRET DATE 05/03/59

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Product Int			056-01 10/03/83	626-01 99704/87	626-92 99704785	1 626 63 09/04/H7	256-04 09/01/87
No.	PARAMETER	HEASURE	PARAMETER VALUE+/-UNCERTAINTY	PARTETTR VALUE + Z-1983 RIAINIY	PARAMETER VALUE A. TURKERTAL		
Heart 0.15	AL INITY	MG/L CACOS	874.	829.	R29.	829.	829.
Mary 0.7 0.094 0.494	MINIM	MG/L	*	0.36	9.39	0.39	0.38
High	MUTTO	M6/1	0.7	1.0)	6 6.1	4.6	1.0)
High 1,000 0,000	IMONY	MG/L	*	0.084	0.119	0.416	0.433
High	ENIC	MGAL		0.033	6.039	6.027	0.036
High	HILL	HG/L		0.01	0.05	0.02	0.05
High	YI LIIM	MG/L					
High Color	NO	M5/1	6.0	6.79	0.30	0.84	0.84
High Color	MIDE	M6/1		0.1	4 0 4	+ 0)	, 0 ,
High SSR	HILL	MG/L	100.00)	\$ 0.605	0.00%	9.905	200.00
High Tigo Control	CTUM	MG/I	533.	428.	434	432	478
High Color	DRIDE	MG/I	730.	707.	404	404	404
HEAL 1900.	MILIM	M6/1		0.01	10.01	100	,000
High Color	AL T	MG/I		0.02	0 00	0 0	, 000
High	DUILTANCE	UMHO/CK	13000.	4520	4520	4520	4520
150.1 10 10.56 10.58 10.58 10.56 10.56 10.58 10.58 10.56 10.56 10.58	PIR	MGAL	0.08	0.03	6.03	0.03	0.03
Fig. 1	HIDE	M6/1					50.0
PCTAL	DRIDE	HG/L	.01	0.5A	97.0	75.0	200
	SS AI PHA	PETA				*000	200
HGAL	SS BETA	PC1/1				550	480
HGAL P21. P06. P0.01 P0.01 P0.01 P0.02 P0.01 P0.02 P0.01 P0.02	7	MS/I	1.0	**			
High 1921. 1906. 1907. 1931. 1933.		MG/L		0.03	0.01	0.00	0.02
HGAL 4.06 4.01 4.09 4.09 4.09 4.09 4.00	HESTUR .	MS/I	924.	506.	924.	934.	633
HGAL HGAL HGAL HGAL HGAL HGAL HGAL HGAL	JAME SE	MG/L	4.06	4.01	4.07	4.48	4.30
HGAL 0.14 0.001 0.002 0.008 0.002 0.003 0.002 0.003	URY	MG/1		0.0002	0.0992	0.0000	0.0002
HEAL 10.03 0.03 0.03 0.03 150.0	REPENDE	MG/L	0.1	(0.01	0.02	0.08	0.02
HEAL 10. 190. 150. 1	CFT.	MG/L		6.03	6.03	6.03	6.03
150	MATE	MG/L	.0+	170.	1.0.	450.	150.
150.4 150.4 152.7 222.	TITE	m6/L		1.0 >	(0.4	6.0.1	4 0.1
Fig. 1. Fig.	£ M03	MG/L					
FIGURA 7.22 7.02 7.02 7.02 7.02 7.02 7.02 7.02	CARRON.	MG/L		227.	222.	278.	232
Str. 7.22 7.02	240	PCIA					
HGAL 1.2 0.43 0.39 0.55 1.3 1.1		. 115	7.22	7.02	7.62	7.67	7.02
FCIAL S1.8 6.4 1.3 0.4 1.3 0.3 1.3 1.1 11.5 11.5 11.5 11.5 11.5 11.5	PHATE	MGAL		0.61	6.43	0.36	
HGA S1.8 40.0 40.0 40.5 41.5 6.1 6.1 6.1 6.1 6.1 6.1 6.1 6.1 6.1 6.1	210	PCIAL		*		0.3	
PCIAL FOLIA 6.1 6.1 6.1 6.1 6.1 6.1 6.1 6.1 6.1 6.1	MRISSIAM	MG/I	51.8			20.5	
FCIA 0.026 1.3 0.0 1.5 0.3 FCIA 15.0 0.0 1.5 0.3 FCIA 15.0 0.3 FCIA 15.0 15.0 0.3 FCIA 15.0 FCIA	226	PCIA				0.00	0.54
HGA 0.026 0.229 0.229 0.229 HGA 13.4 HGA 13.4 13.4 13.8 HGA 13.6 HGA 143.0 H	822	PCLA				0.0	
MGA 3906. 2574. 2549. 2544. 25 13.4 13.4 13.4 13.4 13.4 13.4 13.4 13.4	HIII	MG/L	0.074			9.00	0.00
MG/1 3906. 2574. 2549. 2544. 25 MG/1 11306. 15.0 15.0 15.0 15.0 16.1 16.1 16.1 16.1 16.1 16.1 16.1 16	TEA	MG/18		11.4	43.4	4 1.4	13.0
HG/L 3006. 2574. 2544. 27.6 HG/L 11200. 2540. 27.0 HG/L 11200. 2500. 27.0 HG/L 11200. 2500. 27.0	UFR	MG/1					13.0
MG/4 11300, 10.25 12.0 17.0 88	Tim	MG/1	3900.	****	245.649	20.00	****
HG/1 14300, 2679, 2700, 8700, 88	CHITTEE	MG/4		K.1.*	45.4	47.6	
M6/1 C 0.1 C 0.1	1 ATh	MC/A	11300	26200	22.49	8700	0.11
	THE	1/314		1 0	6 0.1		. 0

STIL: SHIPDOCK 09/22/85 BEFORE BALE: 08/03/89 BEFORE DALE: 08/03/89

PARAMETER	PEASURE	PAPAHETER VALUE + Z-UNCERTATHEY	PARAMETER PARAMETER VALUE UNCERTAINTY VALUE -	VALUE + A - UNITERIALETY		VAI
TH-230 TKALLIUM THE TOTAL SOLIDS URARTUM VARIADIUM ZTRC	8 87 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	18700. 18700. 1.64 0.5	0.0 0.6 0.534 1.460. 1.22 0.14	1.5 1.2 0.547 1390. 1.16 0.11	14406.	0.888 13900. 1.42 0.114

SITE: SHIPBUCK 09728/85 TO 04/22/89 RIPORT DATE: 05/03/89

PARAMETER				· · · · · · · · · · · · · · · · · · ·		
	UNT TE	PARAMETER VALUE +7 - UNCERTAENTY	PARAMETER Y VALUE + Z - UNITER FAINTY	PARAMETER DALUE +Z - UPCERTATRITY	PARAMETER VALUE +/-UNCERTAINTY	PARAMETER VALUE*/*-UNICERSAINTY
ALKAL THITT	MG/L CACO3	829.	403.	45.0	0 603	920
AL UMINUM	MG/L	0.39	1 0 1		0.3	0.32
AMMONTUM	MG/L	5.8	1.0)	1.6	9.0	1.0
AUTIMONY	MG/L	0.130	0.022		€ 0.003	0.026
ARSENIC	MG/L	0.034	0.01		(0.04	0.016
DARIUM	MGAL	0.02	1.0)		(0.1	0.02
BERTLIUM	MGAL		0.01			,
RORON	MGAL	0.85	0.4	0.6	0.3	0.49
BROMIDE	MG/L	0.1	6.2			6.0
ADTIUM	MGAL	0.005	0.003	100-60	0.001	50000
CALCTUM	MG/L	440.	37.6.	344.	549.0	440.
CHLORIDE	M6/L	414.	220.	180	430.0	157
HROMIUM	MG/L	(0.01	(0.01		0.04	0.00
DBALT	MG/L	(0.01	(0.05		0.42	000
COMPUETANCE	UMHO/CH	4520.	4650.	6000	4500.0	37.00
OPPFR	MGAL	6.03	0.05	0.04	20 0	0 00
YANIDE	MG/L		0.01		, 0.04	70.0
LUGRIDE	MGAL	0.56	0.7	7.	7.0	75.0
SRUSS ALPHA	PC1/L	830. 450.	270.			
BRUSS BETA			240.	50.		230 70
IRON	M6/L	**	01	0.08	0-40	
FAB	M6/L	0.01	10.00		0.00	0.04
TAGNESTUR	M6/L	938.	527.	485.	696.0	436.
MANICARESE	MGAL	4.48	2,08	3.87	5.92	3.44
TERCORY	MGAL	0.0003	₹ 0,0002		(0.0002	(0.0002
HOL YEDE NUM	MG/L	0.04	10.00	0.13	0.11	0.01
MILEREL	Hb/L	0.03	0.04		0.40	0.01
HITPITE	MG/L	150.	23.	.081	220.0	75.0
HILL R HILLS	MG/A				1.0	1.0
TRE. FARROW		200			00.4	
PB-240			8 0	- 70	130.	9.09
	, AS	7.03	7.21	7.07	-	7.45
PHOSPHATE	MG/L	0.46	1.0 1		0.1	25.0
PB-240	PCI/L	2.6 1.7		, 0	0.0	
PUTASSTUM	MGAL		35.3	30.3		24.0
RA-226	PELA	0.0 0.1				0.4
228	PCIAL			6.0	6.2	6.3
STERIOR	M6/1	0.240	0.072	(0.00%	70	0.476
SHIPA	MEA	14.1			7.	11.4
21.00	M6/1		10.0		(0.01	
Subtain.	M6/1.	2553	1510.	2050.	2500.0	1683.
CIN FAIL	MEZA.	0.1	7.2	******	4.7	57.6
78 F 164	MIC./1	. 0 .		6.310.	0.046.0	.,480.
H MFI BATHE		3.24			10.0	.0.1

GPOBLE SAFPEGER
STIFE SAFPEGER
67/75/8F TO 64/22/45
REPORT BALL: 03/63/89

		626-05 07/01/87	626-01 04/05/89	88769701 10-228	627-01 09/14/36	626-01 04/05/29 627-01 10/03/85 627-01 09/14/36 627-01 09/14/37
PARAMETER	MEASURE	YIGH	VALUE A UNITERATETY VALUE A UNITERATETY	PARAMETER VALUE 17 TURY RELEBETY	PARAMETER VALUE + / UNCERTAINTY	PARAMETER VALUE+7-CHCERTAINTY
TH-230 THALLTUM TIN TOTAL SOLIDS URANTUM VAHADTUM ZINC	7077 1677 1677 1677 1677 1677 1677	0.0 0.6 - 0.592 14400. 1.10 0.11	0.4 0.5 0.01 0.007 0.550 0.03 0.03	46560. 46560. 6.67 0.39	6 0.005 13700.0 0.948 0.27 0.065	0.45 0.645 8630. 0.388 0.08

STILL SHIPPOCH 04/22/39 BLPORT DATE 09/23/05 TO 04/22/39 BLPORT DATE 09/03/89

The color The			628-01 10/04/85	628-92 10/04/65	528-52 10/64/65 578-03 10/64/85 529-04 10/04/85	629 04 10/04/85	828-05 10/04/85
	PARAMETER	UNIT OF MEASURE	PARAMETER VALUE+/-UNCERTAINTY	PARAMETER VALUE + Z - URITETATUTY	PARAMETER VALUE + * - URTERTATUTY	PARAMETER VALUE + / - BRICE RTAINTY	PARAMETER VALUE+/-UNCERTAINTY
HEAL	AL KAL INITY			422.	477.	422.	422.
High 1-2 1-2 1-3 High 1-2 1-3 High 1-3 1-3	ALUMINUM	#67L					
HEAT 0.6 0.7 0.7 HEAT 0.6 0.7 0.6 0.7 HEAT 0.6 0.6 0.7 HEAT 0.6 0.6 0.7 HEAT 0.6 0.6 0.6 HEAT 0.7 0.6 0.6 HEAT 0.6 0.6 0.6 HEAT 0.6 0.6 0.6 HEAT 0.6 0.6 0.6 HEAT 0.6 0.6 H	MONTHIM	MGAL	4.6	1.2	•	1.3	1.2
High	THOME	MG/L					
High	SENIC	MG/L					
The mode Co.	FIUM	HG/L			+	1	
Heart Color Colo	WELLION.	M6/L					No. of the last of
He H5/L 0.004	(OM	MGAL	9.0	0.5	9.6	0.7	0.5
The first	MIDE	MG/L					
10	MILIM	M6/L	100.00	(0.001	100.00)	0.001	100.00)
The man	E1UM	MGAL	327.	372.	387.	388.	400.
THE HIGH THE CALL	GRIDE	MG/L	180.	180.	180	180.	180.
The color The	MILIAM	MG/L					
Color Colo	INI T	M6/1					
No.	DUCTANCE	UMHO/CH	7000.	7000.	7000	2000	2000
No.	PER	MG/L	0.04	0.03	0.03	0 03	0.00
No.	MIDE	MG/L					6.03
STUTE PETAL PETA	IOR IDE	MG/L	5.5	5.5	5.7	7.2	7.5
RETA PCTAL 0.1 0.04 0.04 0.04	ISS ALPHA	PCIAL					
His	ISS BETA	PEIAL				,	1
Study MGAL 3984. 3844. 3884.	2	HG/L	0.1	0.07	7.07	0.04	0.07
STUTH NGAL 3998, 3795, 3934, 3988, 465 1.65	0	MGAL					
1.65 1.60 1.60	MESTUM	MG/L	398.	379.	384.	388.	408.
TE TIGAL 0.2 0.05 0.1 0.1	IBANESE	M67.	2.45	1.65	1.65	1.65	1.65
TE HSAL 6.0.5 6.10 6.10	CORT	M6/L				1	
TE HGAL 160. 150. 160. 140. 140. 140. 140. 140. 150. 140. 140. 150. 140. 150. 140. 150. 140. 150. 140. 150. 140. 150. 140. 150. 150. 150. 150. 150. 150. 150. 15	FEDERALIN	MC AL	0.7	0.05	0.1	0.1	0.23
TT MG/L HO3 MG/L HO3 MG/L CARBON MC/L O PCI/L O PCI/L SIUM MG/L SIUM MG/L A PCI/L O COOS O C	DATE	MC/I		47.	-		
HORAL HOLAL T.16 T.18	BITE	MC/1	100.	160.	160.	140.	140.
CARBON MSA. O FCIAL SU 7.48 FCIAL SU 7.48 6.605 0.605	8 HU3	MG/1					
0 PCIAL 7.48 7.48 7.48 NATE MAL 7.48 7.48 7.48 STUM MAL 27.1 44. 44.2 STUM MAL 6.04 0.06% 0.09% N MAL 6.00 0.00% 0.09% N MAL 100% 100% 100% M	. CARBON	MC/1					
SU 7.18 7.18 7.18 7.18 7.18 7.18 7.18 7.18	210	PCIAL					1 1
E MG/L H FCL/L H MOAL 27.11 (0.6.4 41.2 H MOAL 27.11 (0.6.5 41.2 H MOAL 0.01 0.005 0.005 0.006 H MOAL 0.006 1570. 1570. 1570. 1570. 1570.		. 95	7.18	7.48	7.16	7.48	7.48
MGA 27.1	SPHATE	MG/L					2
H H6AL 27.1 10.6 41.2 41.2 41.2 FC1AL 0.01 0.005 0.005 0.005 0.006	240	PC1/L					
PCIAL 0.04 0.06% 0	FASSTUR	MGAL	27.1	10.6	***	41.2	41.
M6.71 0.04 0.06% 0.66% 0	226	PC1/L					
HGAL 0.04 0.06% 0.	228	PCIAL					*
HEAT 1970. 1570. 1570. 1570. 1570. 1570. 1570. 1570. 1570. 1570. 1570. 1570. 1570. 1570.	HILL I	H67.	0.01	0-00%	0.000	0.696	9000
HGA 1970. 1570. 1570. 1940. 1940. 1951. 1951. 1950. 1950. 1950. 1950. 1950. 1950. 1950. 1950. 1950.	15.E	MG.1					
H571 '3010. 5420. \$310. 5756.	HIII	MG/1	-t-00-	1570.	1000	40.60	****
MS.4 '3310, '5070, 5310, 5526, MS.4 Store Co.	HILL THE	MIS/1				1040.	17003
The section of the se	FAIR	ME/A	.010.	1,020	5310.	5556.	5430.
	T 101						

STIL: SHEPRIKE OFFICE TO 04/22/89
AFPORT DARE: 08/03/89

		628-01 10/04/85	628-02 10/04/85	628-03 10/04/05	628-04 10/04/85	628-02 10/04/85 628-03 10/04/85 628-04 10/04/85 628-05 10/04/85
PARAMETER	UNIT OF MEASURE	PAPAMETER VALUE+7-UNCERTATUTY	VALUE AZ UREKRIATRIK V	PARAM TER UCLUE 17-UNITRIAINIY	PARAMETER PARAMETER PARAMETER PARAMETER PARAMETER VALUE + 7 - UNICERTATINTY VALUE + 7 - UNICERTATINTY VALUE + 7 - UNICERTATINTY	PARAMETER VALUE + / - UNCERTAINTY
H-230	PC171					
HALL TUM	MGAL					
In	MGAL	\$ 00.00 \$	(0.005	4 0.00%	50000	5000
TOTAL SOLIDS !	S MG/L	9400.	9550.	9240.	9420.	9750.
RAMIUM	MGAL	0.526	0.555	0.597	0.497	0.577
MARIADIUM	MG/L	9.0	0.5	0.7	0.3	0.7
THE	MGAL	0.051	0.046	0.049	0.045	0.048

STIE: SHIPROCK
69778/85 TO 04727/89
REPORT DATE: 08203789

MAIL OF PARMETER P	HATT HEALE CACION ANALES			78791 747 10787	10701	The state of the s					667-01 04	10/01/01
The part of the	MINITY MEAL CACKED 399. 277. 374. 375.	METER	UNIT OF MEASURE	PARAMETE VALUE+/-UNCERT	RAIBIY			PARAMETER RUE + / UNCERTAINTY	PARAMETER VALUE+/-UNICERTAL	NTY	VALUE+/-UNCE	RIGINITY
No. 10. No. 10. No. 10. No. 10. No. 10.	No.	AL INITY				277.		37.4	425.		***	
		MINUM	MG/L	0.33		(0.1			0.30		. 0 .	
The color	The color	BNIUM	MGAL	1.0)		1.0)		9.0	2.5			
The color	The color The	IMORIY	m67L	0.000		0.028			0.016		0.004	
The field		FMIC	MGAL	0.020		10.01			0.005		0.04	
1714 1854 6.24 6.24 6.25 6.24	1111 115	-	MG/L	0.01		1.0)			0.05		, 0	
Fig. 1	New York	YLLIUM	MG/L			(0.01					000	
HEAT	No.	NO	MG/L	0.54		0.2		5.0	0.34			
High	The color	MIDE	MGAL	1.0)		1.0)			* 0 3			
Union Unio	The	HILL	MG/L	(0.005		0.002	~	0.001	4 0.005		0 003	
The mode 10.04 10.04 10.04 10.04 10.04 10.04 10.04 10.04 10.04 10.04 10.04 10.04 10.04 10.04 10.05 10.04 10.05 10.04 10.05 10.04 10.05 10.04 10.05 10.04 1	The first (193.)	CIUM	M6/1	418.		400.		547.	395		420	
Transfer Court C	The minute 10.000	ORIDE	MGAL	193.		130.		180.	72.		X	
Tarker Tarker Court Co	Tarker Wincer Court Co	OMINA	MG/L	10.00		0.00			0.01		10.01	
Control Cont	Colore Utholytical Uthol	AL T	MG/L	10.0)		(0.05			0.00		50.0	
Fig. 1	Name	DUCTANCE	UMH0/CH	3240.		4000.		7006.	3750.		3300.	
No.	NET MEAN Color	PER	m6/L	0.02		0.02		0.04	0.01		0.05	
The first The	1.4 1.4	MIDE	MGAL			10.0					10.0	
Strict S	NETAL 1900. 1900. 2300. 600. 230	DRIDE	m6/L	0.58		,		6.7	1.4		1.4	
STATE Color Colo	No.	SS ALPHA	PEIA	300.	.08		.0			+	39.	26.
STUTH NEW Co. 0.0	STUIN NEAL 0.01 0.08 0.08 0.09 STUIN NEAL 493.01 2.32.01 3.37. 83.7 STUIN NEAL 493.01 2.32.01 3.37. 83.7 STUIN NEAL 493.01 2.32.01 3.37. 83.7 STUIN NEAL 0.0002 0.010 0.01 0.0002 STUIN NEAL 0.002 0.004 0.01 0.0002 STUIN NEAL 0.002 0.004 0.01 0.0002 STUIN NEAL 40.2 0.00 0.1 0.01 0.01 STUIN NEAL 412. 7.25 7.23 7.240 0.01 STUIN NEAL 6.00 6.1 0.04 0.4 0.4 0.4 0.4 STUIN NEAL 6.00 0.1 0.00 0.1 0.01 0.01 STUIN NEAL 41.8	SS BEIR	PLIAL.	230.	.09		.0.			7.	35.	**
STUTH High 1973 1974 1974 1975	STUM NO. Co.		116/L	0.01		30.0		30.0	10.00		0.07	
No.	NEST NEAL 3.05 1.34 3.35 8.37 8.37 NET NEAL 0.0002 0.0002 0.0002 NEAL 0.001 0.001 0.01 0.002 NEAL 0.002 0.001 0.01 0.001 NEAL 0.002 0.004 0.001 0.001 NEAL 0.01 0.00 0.1 0.01 NEAL 0.01 0.00 0.1 0.01 NEAL 0.01 0.00 0.1 0.00 NEAL 0.00 0.1 0.00 0.1 0.00	MESTIN	MGAL	10.0		10.01			10.01		10.01	
RY FIGAT 0.0002 0.010	RY M671 0.0002 0.0002 0.0002 0.0002 0.0002 0.0002 0.0002 0.0002 0.0002 0.0004 0.0002 0.0004 0.0002 0.0004 0.0002 0.0004 0.0002 0.0004 0.0002 0.0002 0.0004 0.0002 0.0004 0.0002 0.0004 0.0002 0.0004 0.0002 0.0004	GANESE	MGA	3.05		236.		337.	83.7		8.97	
	DENUIT MGAL	CURY	rf6/L	0.0002		6 0 0000		6.34	0.39		0.18	
High	H6AL 0.02 0.04 H80. 6.04 H80.	YBDE NUM	M6/L	0.01					0.00		2000.0	
TE MGAL 105. 38. 180. 186.8 60.1 MAT MGAL 142. 72.5 60.1 CARBON MGAL 142. 72.5 60.0 CARBON MGAL 142. 72.5 7.40 7.40 7.40 7.40 O	HG/L	KF1.	MGAL	0.02		0.64			70.00		10.00	
He He He He He He He He	He He L C C C C C C C C C	RATE	MG/L.	105.		38.		180.	BK.B		70.07	
CARBON MG/L 142. 72.5 35.8 34.8	CARBON MGAL 142. 72.5 9.5 - 35.8 35.8 9.7 9.0 9.5 - 7.45 9.7	RITE	MGZL	(0.1		1			1.0			
CARBON FIG.1. 112. 72.5 35.8 35.8 34.8	Corrigion NGAL 142. 142. 142. 142. 142. 142. 142. 142. 142. 142. 142. 143. 14	8 NO3	MG/L									
FCIAL T.46 7.45 7.23 7.49 0.5 7.44 7.44 7.44 7.44 7.44 7.45 7.46 7.45 7.46 7.45 7.46 7.45 7.46 7.45 7.46 7.45 7.46 7.45 7.45 7.46 7.45 7.45 7.45 7.45 7.45 7.45 7.45 7.45	FULLAL FOLLAL FOLLO 0.5 7.23 7.40 0.7 7.46 7.40 0.5 7.40 0.5 7.40 0.5 7.40 0.5 7.40 0.5 7.40 0.5 7.40 0.5 7.40 0.5 7.40 0.5 7.40 0.0 1.1 0.5 7.40 0.0 0.1 0.2 7.0 0.0 0.1 0.0 0.1 0.0 0.1 0.0 0.1 0.0 0.1 0.0 0.1 0.0 0.1 0.0 0.1 0.0 0.1 0.0 0.1 0.0 0.1 0.0 0.1 0.0 0.1 0.1	. CARBON	MG/L	112.					35.8		34.8	
FE M6AL 0.55 (0.4 - 23 7.46 7.46 7.47	F SU	647	PCIAL				5.0			6.0	0.5	
	FC1AL 0.25 0.4 0.4 0.27	COUNTE	05	7.46		7.35		7.23			7.44	
HEAL 27.0 1.1 20.4 23.5 0.0 0.7 0.6 13.7 13.7 13.7 13.7 13.7 13.7 13.7 13.7 13.7 13.7 13.7 14.8		240	Dr. v	0.55					0.27		0.1	
FCT/L 0.0 0.1 0.0 0.1 0.0 0.1 0.0 0.0 0.0 0.0	PCTAL 0.0 0.1 21.5 23.5 0.7 0.0 0.1 0.0 0.1 0.0 0.1 0.0 0.1 0.0 0.1 0.0 0.1 0.0 0.1	ACCTION.	ICIVE.	0.0	1.1		6.4			2.0	9.0	0.0
FCIAL 0.0 0.1 0.0 0.1 0.0 0.1 0.0 0.1 0.0 0.2 0.0 0.1 0.2 0.2 0.2 0.0 0.2 0.0 0.1 0.2 0.2 0.2 0.0 0.1 0.2 0.2 0.0 0.1 0.2 0.0 0.1 0.2 0.0 0.1 0.2 0.0 0.1 0.2 0.0 0.1 0.0 0.1 0.0 0.1 0.0 0.1 0.0 0.1 0.1	PCIAL 0.00 0.1 0.00 0.1	307	DCT /4	0-17				23.5			13.7	
HGAL 0.204 1.2 0.0 0.4 1.5 0.2 0.647 11.8 11.8 0.647 11.8 0.647 11.8 0.647 11.8 0.647 11.8 0.647 11.8 0.647 11.8 0.647 11.8 0.647 11.8 0.647 11.8 0.647 11.8 0.647 11.8 0.647 11.8 0.647 11.8 0.647 11.8 0.647 11.8 0.647 11.8 0.647 0.647 11.8 0.647 11.8 0.647 11.8 0.647 11.8 0.647 11.8 0.647 11.8 0.647 11.8 0.647 11.8 0.647 0.647 11.8 0.647 11.8 0.647 11.8 0.647 11.8 0.647 11.8 0.647 11.8 0.647 11.8 0.647 11.8 0.647 0.647 11.8 0.647 11.8 0.647 11.8 0.647 11.8 0.647 11.8 0.647 11.8 0.647 11.8 0.647 11.8 0.647 0.647 11.8 0.647 11.8 0.647 11.8 0.647 11.8 0.647 0.647 11.8 0.647		000	PC1/1	0.0	6.1		1.0			9.4	0.0	0.
HIGH 11.8 (0.005 (0.005) (0.104) (11.8) (12.5) (13.10)	HEAL 11.8 C.065	CHILIM	ME A	0.0	1.2		6.0			1.5	0.2	0.5
HEAL 1989. (0.64 1550. 1550. 1550. (2.30 1550. 1550. 1550. 1550. 1550. (2.30 1550. 1550. 1550. (2.30 1550. 1550. 1550. (2.30 1550. 1550. 1550. (2.30 1550. 1550. 1550. 1550. (2.30 1550. 1550. 1550. 1550. (2.30 1550. 1550. 1550. 1550. 1550. (2.30 1550. 1550. 1550. 1550. 1550. (2.30 1550. 1550. 1550. 1550. 1550. (2.30 1550. 15	HISAL 1889. (0.64 1869. HISAL 1889. (19.64 1890. HISAL 9.75 1896. 1896. 1896. HISAL 8280. (33 1864. HISAL (0.4 1896. HISAL (0.4 1896. HISAL (17.5 1896. HISAL (ICA	MG/1			6.000		6.005	0.104		0.647	
H H571 1889. 1310. 1560. 1660. 1021. 5.4 1671. 5.4 16.30 16.	H H57L 1889. 1310. 1560. 1660.	UER	MS/1			0.01			12.5			
H6/L 6280. 55.6 55.5 55.30 6.30 H6/L 6280. 5550.	HI NOAL 6280. 5.46 15.50 185.0	IIII	M6/1	4889.		1310		17.70	* 000		,,,,,	
H6/1 6250, \$460.	HG/L 6250, 4460, 5550, 379 HG/L (0.1 (0.	CHILINE	MIS/A.	9.75		5.6		-	4.30		604.	
Mid (6.1 (6.1	THEFT C. PICKET 17.5 9.4	FAIT	11671	6250.		1950.		5550.	3276.		1200	
	C. Markett 17.55 %.	T IN		1.0		1.0			1.0		1.0	

GRIPPE UNTER ORBEITY DATA BY LOCATION STIE: SHIPPENCK 09/22/89 REPORT DATE: 08/63/89

PARAMETER	UNIT OF	628-01 09716/87 PARAMETER UALUE+/-UNICERTAINTY		FARAMITER VALUE / UNCERTAINTY VALUE / UNCERTAINTY	PARAMETER VALUE */ UNCERTAINTY	PARAMETER VALUE +/ - UNCERTAINTY
TH-230	PEIAL	0.1 0.8	0.0 0.3	-	0.4 0.7	0.0 0.3
IN THE PERSON	MG/L	695.0	0.00	1 0 001	0 230	0.01
ITAL SOLID	NS MGAL	9720.	6750.	18660.	5090.	4790.
ANTUM	MG/L	0.405	0.314	0.554	0.0316	0.0299
HIVETOR	MG/L	80.0	90.0	4.0	6.08	0.05
ME.	MG/L	0.028	0.032	90.0	9.029	0.033

STIE: SHIPPINCY 09728/85 TO 04/22/89 RFPORT DATE: 08/03/89

		630-04 40/04/85	630-01 09715786	630-01 08/30/87 631-	631-01 09/39/85	634-02 99730785
PARAMETER	UNIT OF MEASURE	PARAMETER VALUE+7-UNCERTAINTY	PARAMETER VALUE+/-BREERTAINTY	PARAMETER VALUE+7-UNCERTAINTY	PARAMETER VALUE + / - UNCERTAINTY	PARAMETER UALUE+7-UNCERTAINTY
AL KAL INTLY	MG/I CACO3	303.	476.0	124	422.	422.
ALUMINUM	M6/L		0.1	0.51		
AMMONTON	M6/L	0.3	9.0	5.5	0.2	0.2
MATIMONY	MGAL		(0.003	0.000		
ARSENIC	MG/L		(0.01	0.005		•
BARTUM	MGAL		0.1	0.03		
BERYLL TUM	MG/L					
BORON	MG/I	9.0	6.3	98.0	7-0	5.0
BROMTOF	M6/1		2	6 0.4	2	2:,
CADMILLE	MCA	****	, 00 00 ,	2000	, 00 00 ,	, 0000
CAI CTION	MEZI	498	447.0	500.0	200.00	100.00
CHI OR TOF	MG/I	480	0.07	73.	.010	139.
CHECKTUR	MC/I	.001	0.00		.ver	130.
CORAL T	MG/I		0.07			
CONDINCTONCE	HIMID /CM	7000	42.0.0	22.00	4300	4200
COPPER	MC./I	0 00	0.003	3300	0 03	1300.
LYAMINE	MCA	****	50.0	0.03	6.03	6.03
Ci iido inc	140.71					
COURTE ALBUN	110/L	7.0	1.3	***	1.0	
CDOCC RETA	PCI/L					
TERM	ME/I	00 0	0 00	, 000		
FAD	#6./I	10.0	00.00	10.0	6.31	9.35
MAGNESTIM	MG/I	330	0 + 0+	94.7	9000	334
HANGANE SE	M6/I	0.41	6.62	22.0	67.6	65.83
TERCHRY	M6/L		(0.0092	0.0002		3 -
MOL YRDENUM	MG/L	0.05	0.11	9.04	0.2	10.0
MICKEL	MG/L		0.09	(0.01		
VITRATE	M6/1.	180.	0.091	97.5		43.
HITRITE	MG.1		(0.1	(0.1		•
HO2 & NO3	MGAL					1
DEG. CARRON	MGAL		10.	36.7		
08-240	PCIAL		0.0 2.4	1.5 1.0		
110	Su	7.22	7.36	7.32	95.9	96.99
PHINSPHATE	MGAL		1.0)	,		
PD-240	PCIAL		0.0 0.5	0.0 0.7	1	
POTASSTUR	MG/L	23.9			12.3	42.3
RA-226	PCIAL					
RA-228	PCIAL		6.3 1.3	0.6 1.8	,	•
SULENTUM	MG/L	0.005	+.		5000	2000
SILIEA	MG/L		7.	12.0		
STUMER	MG/L		(0.01			
SOUTUR	MEAL	1700.	1110.0	1021.	748.	828
STRONTTUM	MEZZ	4	5.9	4.35	T	
THE LATE	H 6/1	5370.	3710.0	3320.	3040.	3040.
101 110	MIS/I		(6.1	1.0)		
BILLIA LIM II	C - IN CIPE	6.5	24.9	24.5	.61	.69.

SITE: SHIPROCK
09/26/85 TJ 04/22/89
REPORT DATE: 08/03/89

		630-01 10/04/85		## 1D - SAMPLE TD AMP 1 630-04 08/30/87	630-01 09715786 630-01 08730787 631-01 09730785	631-02 09/30/85
PARAMETER	UNIT OF	PAPAMETER VALUE+7-UNCERTAINTY	PARAMETER VALUE + / - UMCF RTA (NTY	VALUE +/- UNCLETAINTY	PARAMETER VALUE +/ - UNIVERTAINTY	VALUE +/-UNCERTAINTY
TH-230	ינוע 19ער	1,	9.0 2.0	0.0 0.5		
TIN	MGAL	\$ 0.005	(0.005	0.237	0.005	50000
TETAL SOLID	5 MG.4.	8960.	5510.0	5160.	5346.	5330.
URANIUM	MG/L	5.0	0.484	0.0307	0.0459	0.0459
VAHADIUM	M6/L	0.5	0.20	0.12	4.0	0.5
ZIMC	MG/L	0.068	0.094	0.025	0.073	0.071

STIE: SHIPFOCK 09/28/85 TO 04/22/39 REPORT DATE: 08/03/89

				一日の日の日の日の日日日日日日日日日日日日日日日日日日日日日日日日日日日日	日本 日	三十二十二十二十二十二十二十二十二十二十二十二十二十二十二十二十二十二十二十二		は 日本 日 日 日 日
PAKAHETER	MEASURE	PARAMETER VALUE+/-UNCERTAINTY	PARAMETER VALUE + / UNCERTAINTY	PARAMETER VALUE + 7 - UNCERTAINTS	PARAMETER VALUE+/-UNCERTAINTY	иту	PARAMETER UALUE+/-UNCERTAINTY	TER
AL KAL INTTY	MG/L CACO3	422.	422.	422.	45.4.0		49.4.0	
AL UMINUM	H67L				0.2		0.2	
AMMONTUM	MGAL	0.3	0.2	0.2	(0.1		1.0)	
ANTIMONY	MG/L				(0.003		(0.003	
ARSENIC	MG/L				10.00		10.0	
BARTUM	MG/L	1			1.0		100	
BERYLL IUM	MGAL	1						
BORON	MG/L	0.5	9.0	5.0	4.0		* 0	
BROMIDE	MG/L							
CADMIUM	M6/.	(0.001	0.001	0.001	*****		1000	
CALCTUM	MG/L	492.	553.	443.	550.0		650.0	
CHLORIDE	M6/1	150.	150.	450.	240.0		240.0	
CHROMITIM	M6/L	1			0 00		0.05	
CUBALT	1/94				0.02		0.03	
CONDUCTANCE	UMH0/CM	4300.	4300	4300	3000		3000	
COPPER	MG/L	0.03	0.03	0.03	0.000		3000.0	
YAMIDE	M6/L				50.00		0.03	
FLUORIDE	M6/L	1.6	5.5	5.4	4.0			
GRUSS ALPHA	PCIAL							
GROSS BETA	PEIAL							
IRON	MGAL	0.31	0.3	0.3	07-0		0.40	
EAD	M6/L				0.00		(0.01	
MAGNESIUM	M6/L	237.	239.	234.	300.0		300.0	
MANGANE SE	MGAL	9.42	83.88	83.88	09.6		69.6	
TERLINE.	m6/L		4		2000-0		(0.0002	
HOLTBOR NUM	m6/L	0.22	0.1	0.25	0.08		0.08	
MICKEL	M6/L	. :			0.04		0.04	
MITOTIC	M6/L	13.	.9	12.	0.1		0.1	
MILLS & MILLS	MG/L				1.0		1.0	
ORG. CARRON	ME/I				, 000		, ,,,	
PB-240	PCIA	1			130.		130.	<
	. 115	6.96	6.96	4.96	7.04		7.04	0.0
PHOSPHATE	MG/L.							
01-540	PCIAL				0.0	20	00	0 0
PUTASSTUM	MG/L	12.5	12.5	12.5	13.8		13.8	
RA-226	PCIVL				0.2	0.2	0.5	0.
PA-228	PCIAL				0.3	6.0	0.3	1.0
SELERIUM	MG/L	(0.005	500.0	500.00 >	0.005		(0.005	
SH H.O	797				9.		. 6	
SHOLK	1/91				10.01		10.0)	
STEDELTIM	MG/1	.35.	710.	.028	750.0		750.0	
SHEFATE	M67L	3050.	.3090	Cook	2000		2440 0	
SHILLIDE	MG/1			-	3400.4		20000	
THE PARTE	C - DE GREE	49.	19.	19.	20.5		20.5	

SITE: SHIPPING OF THE DATA BY LOCATION SITE: SHIPPING 09/22/22/29 PEPURI DATE: 08/03/89

PARAMETER	UNIT OF MEASURE	PARAMETER VALUE+/-UNCERTAINTY	PARAMETER VALUE+7-UNCERTAINTY	PARAMETER UALUE+7-UNICERTAINTY	PARAMETER PARAMETER	PARAMETER VALUE +/ - URICE RIAINTY	ETER
TH-230 F	PCIAL MSAL				0.0 0.4	0.0	0.5
TAL SOLID	MG/L NS : MG/L	\$330.	5360.	5390.	500.0)	0.005	
MUION	MGAL	0.0459	0.0455	0.0467	0.0485	0.0474	
IMC	MGAL	0.078	0.065	0.674	0.020	0.020	

STIE: SHIFFOCK
09728/85 TO 04/22/89
REFORT GATE: 08/03/89

Thirty of Parkhetter Parkhe	High Color			-	031-03 07/20/46		631-04 07/26/86	-		-			0	632-01 07/27/85
The Mark Cardinal 408.00 488.00 488.00 447. 33 488.00 488.00 488.00 447. 33 488.00 488.00 488.00 447. 33 488.00 488.00 488.00 448.00 448.00 488.00 4	The first caches 485.0 4	ARAMETER	HEASURE	UAL	PARAMETER UE+/-UNCERTAINTY		PARAMETER UE+/-URCERTAINTY	0,0	PARAMETER EUR + / - UNCERTAINT		PARAMET VALUE+7-UNCER	ER	VALL	PARAMETER E+/-UNCERTAINTY
High	High 1	KAL INITY			486.0	1	466.0		404 O	1	4.6.7		-	37.6
High (0.04)	HEAT	UMINUM	100		3.2		0.2		0.2		0.92			
High	High (0.003	MUNITER	MG/L	*	0.1	,	0.1	~	0.1		8.9			0.7
HEAL	HEAL	TIMONY	MG/L	*	0.003	~	0.903	*	0.003		6.009			
High	High	SENIC	MG/L	*	0.01	,	0.01	,	0.01		0.044			
High Color	High	RIUM	MGAL	~	0.1	~	0.1	*	0.4		0.03			
High	High Color	RYLLIUM	MG/L											
HEAT C	HEAL Cool	RCN	MG/L		0.4		0.4		0.4		0.50			7 0
High Coop	HEAT SSO.00 SSO.00 SSO.00 SSO.00 SSO.00 HEAT SSO.00 SSO.00 HEAT SSO.00 SSO.00 SSO.00 H	OMIDE	MG/L		1						0.3			
High 250.0 550.0	HEAT 250.0	DHIUM	MGAL	-	0.001	,	0.001	*	0.001	100	500.0		,	900 0
High 240.0 240.0 240.0 188. 188. 188. 187. 240.0 240.0 240.0 240.0 188. 188. 187. 240.0 240.	High 240.0 240.0 240.0 240.0 18B. 18B	LCTUM	MG/L		550.0		550.0		550.0		556.			430
Title	Title	ORIDE	MG/L		240.0		240.0		240.0		188			130.
The part	Third Thir	ROMIUM	MGAL		0.05		0.05		0.05		10.0			
The color	CE UMHOCK 3800.0 3800.0 3800.0 3600.	BALT	#3/L		0.07		0.07		0.07		0.00			
High 0.03 0.03 0.03 0.09 High High 0.04 0.04 0.04 0.04 0	High 0.03 0.03 0.03 0.09 High High 0.04 0.04 0.04 0.04 0	MOUCTANCE	UMHOZEM		3800.0		3800.0		3800.0		3606.		9	.006
High	High C 0.04 C 0.04 C 0.04 C 0.04 High High High C 0.04 C 0.04 C 0.04 High High C 0.04	PPER	HG/L		0.03		0.03		0.03		90.0			0.03
MGAL 0.4 0.6 0.60 0	High	AMIDE	MG/L	~	0.01	~	0.01	*	0.01					
Mark	Mark	JORIDE	MGAL		0.4		0.4		0.4		0.4			1.5
HGAL	High 0.60 0.60 0.60 0.65	DES ALPHA	PCIAL								16.	16.		
High 0.60 0.60 0.60 0.60 0.68 High 0.01 0.001 0.001 0.01 High 0.0002 0.0002 0.0002 High 0.0002 0.0002 0.0002 High 0.004 0.004 0.004 0.0002 High 0.004 0.004 0.004 0.0002 High 0.004 0.004 0.004 0.004 High 0.007 0.00 0.007 0.004 High 0.007 0.00 0.007 0.007 High 0.007 0.007 0.007 0.007	1674	ISS BETA	PCIAL								27.	18.		
HGAL	HGAL	2	M6/L		09.00		0.60		09.0		6.85			0.4
Mile	H5AL 300.00 300.00 300.00 242. 17.72 17.	Ot.	MG/L	,	0.01	*	0.01	~	0.04		10.0			1
High 1,000	High 0.0002 0.0	SMESTUR	MS/L		300.0		300.0		300.0		242.			187.
High 1,0000 1,0000 1,0	Mart 1,0002 0,0	HORINE SE	m6/L	,	09.6		6.60		9.40		7.72			6.44
Mistrophysical Control Contr	Mily	VON THE	TIG/L		0.0002	,	0.0002	~	0.0002		0.0002			
H6AL	HGAL	YEL	MG/L		90.08		90.0		0.08		0.05			90.0
HGAL	MGAL	FRATE	MG/1	,		,	.0.0		0.04		10.01			
HGAL	MGAL 430. 436. 436. 430. 428. 9.8 9.8 9.7 9.9 9.5 9.9 9.5 9.9 9.5 9.9 9.5 9.9 9.5 9.9 9.5 9.9 9.5 9.9 9.5 9.5 9.9 9.5 9.5 9.5 9.9 9.5 9.5 9.9 9.5 9.5 9.9 9.5 9.9 9.5 9.9 9.5 9.9	RITE	MG/L		0.4		0.0	- ~			4.8			3.
PCI/L 130. 130. 130. 130. 128.	Mark	6 NO3	MG/L								1.7			
FCIAL 0.9 0.8 1.2 0.8 0.7 0.7 0.7 7.05 7.05 8.0 8.0 9.1 7.05 7.05 7.05 7.05 7.05 7.05 7.05 7.05	FCIAL 0.9 0.8 1.2 0.8 0.7 0.7 0.9 0.9 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0	S. CARBON	MG/L		130.		130.		130		428			
SU 7.04 7.04 7.04 7.04 7.02 7.02 7.02 7.04 7.04 7.02 7.02 7.02 7.03 7.02 7.03 7.03 7.03 7.03 7.03 7.03 7.03 7.03	SU 7.04 7.04 7.04 7.05 6.1 6.1 6.50 6.1 6.50 6.1 6.50 6.1 6.50 6.1 6.50 6.1 6.50 6.1 6.50 6.1 6.50 6.1 6.50 6.1 6.2 6.2 6.2 6.2 6.2 6.2 6.2 6.2 6.2 6.2	-240	PCIAL		6						0.0	0		
MGAL (0.1	MGAL (0.1		Stl .								7 62			2 23
FCIAL 0.0 0.5 0.0 0.5 0.0 0.4 0.0 0.6 FCIAL 0.0 0.2 0.2 0.2 0.2 0.2 0.2 0.0 0.1 12.3 0.1 12.3 0.2 0.2 0.2 0.2 0.0 0.1 12.3 0.4 12.3 0.2 0.2 0.2 0.0 0.1 12.3 0.0 0.1 12.3 0.0 0.1 12.3 0.0 0.1 12.3 0.0 0.1 12.3 0.0 0.1 12.3 0.0 0.1 12.3 0.0 0.1 12.3 0.0 0.1 12.3 0.0 0.1 12.3 0.0 0.1 12.3 0.0 0.1 12.3	PCIAL 0.0 0.5 0.0 0.4 0.0 0.6 FRIAL 13.8 0.2 0.2 0.2 0.0 FRIAL 0.0 0.4 1.2 0.2 0.2 0.0 FRIAL 0.0 0.4 1.2 0.2 0.5 0.8 0.0 FRIAL 0.0 0.0 0.0 0.0 FRIAL 0.0 0.0 0.0 0.0 FRIAL 0.0 0.0 0.0 FRIAL 0.0 0.0 0.0 FRIAL 0.0 0.0 0.0 FRIAL 750.0 750.0 750.0 FRIAL 750.0 750.0 750.0 FRIAL 750.0 750.0 750.0 FRIAL 0.0 0.0 0.0 FRIAL 0.0 FRIAL 0.0 0.0 FRIAL	SPHATE	MG/L	-		,	0.1	*	0.1		0.50			3,.,
NEAL 13.8 13.8 13.8 13.8 12.3	MSAL 13.8 13.8 13.8 13.8 12.3	240	PCIA								0.0	Y 0		
PCIAL 0.2 0.2 0.2 0.2 0.2 0.0 0.1 PCIAL 0.4 4.2 0.2 0.2 0.0 0.0 4.0 4.2 0.0 0.1 PCIAL 0.0 0.4 4.2 0.0 0.7 0.5 0.8 0.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0	PCIAL 0.2 0.2 0.2 0.2 0.2 0.0 0.1 PCIAL 0.4 4.2 0.2 0.2 0.0 0.0 4.0 4.0 4.2 0.0 0.1 0.0 0.1 1.0 4.0 4.2 0.0 0.2 0.0 0.0 4.0 4.0 4.2 0.0 0.2 0.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0	LASSIUM	MBA								12.3			13.3
HGAL (0.005 (0.005) (0.005) (0.007) (0.007) (1.00 (MGAL (0.005	-226	PEIAL								0.0	0.1		
HIGH (0.005 (0.005 (0.027 (9.005 (0.005 (0.027 (9.005 (0.004 (9.005 (0.004 (9.005 (9.004 (H6AL	877	PCIAL								0.0	1.0		
HIGH (0.04 (0.	MGAL	HE WILLIAM	M6/L	V	0.002	~	500.0	-	50		0.027		*	6.005
HIGH 750.0 7	HISA 750.0 7	197.0	ME/L	,					.0		16.4			
HIGH 5.7 750.0 750.0 759.	HIGH SAFE CO.5 (20.5) 750.0 750.0 759.	Dille	MCA	,	20.01		0.01	,	0.04		-			
MSAL 3440.0 3440.0 3450.0 3540.0 3360. 2	HSAL 3440.0 3450.0 3450.0 3450.0 3360. 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	RINITION	#671		130.0		759.0		750.0		759.			744.
M67 4 0.1	THE C - DEGREY 20.5 20.5 70.5 19.4	11 ATE	HS/I		3440.0		0.034		0.0450		68-5		•	
	C - DEGREF 70.5 19.4	1011		*	0.1	*	0.1	4.			6.4			

GROWND WATER OFFICE TAY DATA BY LOCATION SITE: SHIPROFT 99728/95, TO 04/22/89 7EPORT DATE: 08/03/89

PARAMETER	UNIT OF MEASURE	PARAMETER VALUE+/-UNCERTAINTY	PARAMETER PARAME	PARAMETER PARAME	PARAMETER UMI DE + / - UNICERTAINTY
TH-230 THALLIUM TIN TIN TOTAL SOLIDS URAHIUM VANADIUM ZINC	PCI/L MS/L MS/L MS/L MS/L MS/L	6.0 0.5 - 0.005 5900.0 0.0179 0.20 0.020	6.1 0.5 6.005 5870.0 0.0180 0.20	5.0 0.5 0.203 5800. 0.49 0.49	4690.

SITE: SHIPSJCK 09723/85 TO 04/22/39 REPORT DATE: 00/03/89

FORMATION OF COMPLETION: ALLUVIUM HYDRAULIC FLOW RELATIONSHIP: DOWN GRADIENT

		-	三日 日日 日日日日日日日日日日日日日日日日日日日日日日日日日日日日日日日日	-	-	其是其者 一下各項 原軍官者在原養者	Water on one of	日本 日 一日 日 日 日 日 日 日 日 日 日 日 日 日 日 日 日 日	Value of the same and one and	-	日本 日	the same or the late of		The state of the s	The Party of the P
PARAMETER	UNIT OF MEASURE	UNI	PARAMETER VALUE+/-UNCERTAINTY	1	un	PARAMETER VALUE+7-UNCERTATATY		PARAMETER VALUE +/ - UMITERIAINTY	RAINIY	N	PARAMETER VALUE +/-UNCERTAINTY	AINTY	UAL	PARAMETER	RAINT
ALKAL INITY	MG/L CACO3		0.90-			406.0	!	404.0		1	406.0		-	404.0	-
AL UMINIM	MG/L		0.3			0.3		0.3			0.3			0.3	
AMMONEUM	MGAL		0.2			0.2		0.2			0.5			0.2	
ANTIMONY	MGAL	~	0.003		*	0.003		0.003		,	0.003		~	0.003	
ARSENIC	MG/L	~	0.01		,	0.01		10.0		*	0.01		,	0.01	
BARTUM	MG/L	~	0.4		*	0.1		1.0		*	0.1		~	0.1	
BERYLL IUM	M6/L														
RORON	MG/L		0.7			0.7		0.7			0.7			0.7	
BROMIDE	MG/L														
CADMIUM	MG/L	-	0.001		,	0.001		0.001		*	0.004		,	0.004	
CALCTUM	M67L		550.0			550.0		550.0			550.0			550.0	
CHLORIDE	MG/L		200.0			200.0		200.0			200.0			200.0	
CHROMIUM	MG/L		0.05			0.05		0.02			0.05			0.05	
COBALT	MG/L		0.08			9.08		0.08			0.08			0 08	
CONDUCTANCE	M3/0HM0		3800.0			3800.0		3800.0			3800.0			0 0000	
COPPER	MG/L		0.02			0.02		0.05			0.02			0.02	
YAMIDE	MG/L	,	0.01		,	0.01		0 01		,	0 04		,	0.01	
LUORIDE	MG/L		0.4			0.4		0.4							
GROSS ALPHA	1/134														
BROSS BETA															
IRGN	HG/L		0.70			0.70		0.70			0 70			0 70	
EAD	MG/L	*	0.01		>	0.01		0.01		*	0.0		,	0.00	
MAGNESTUM	MG/L		260.0			260.0		260.0			260.0			240.0	
MANGANESE	MGAL		8.80			8.80		8.80			8.80			6	
TERCURY	MG/L	~	0.0002		~	0.0002		0.0002		>	0.0032		*	0.0002	
HOL YBDENUM	me/L		0.15			0.45		0.45			0.15			0.45	
MICKEL	MG/L		0.05			0.05		0.05			0.05			0.05	
WITRATE	MG/L	~	1.0		,	1.0		1.0		*	1.0		,	1.0	
MITRITE	MG/L	,	0.4		~	0.1		0.1		*	0.1		*	0.4	
NOZ & NE .											,				
MG. CARBON	Ī		-06			.06		.06			23.			.06	
PB-240	PCIAL		0.2 0.	6.0		0.0	3	0.0	6.0		0.0	6.0		0.5	9.0
	. AS		7.46			7.16		7.46			7.16			7.46	
PHOSPHATE	MGAL	-	0.1		~	0.1		0.1		~	0.1		,	0.1	
PO-240	PCIAL			0.5		0.0		0.0	5.0		0.0	0.4		0.0	0 5
POTASSIUM	MG/L.					45.9		15.9			62.9			45.9	
RA-226	PC1/L		5	6.3				9.0	0.3		9.0	0.3		9.0	0
14-228	PCIAL			1.0		1.1		6.0	1.7		0.6	0.8		0.0	0 0
SELFHIUM	MG/L	~	500		,			0.00%		*	0.005		,	0.005	:
STETEA	MG/L		.01			10.		10.			+0			.04	
STUDER	MG/L	-	0.01			0.01	,	0.01		,	0.04		,	0 04	
Subtum	MG/L		750.0			750.0		750.0			750.0			750.0	
TRONTTOM	MG/L		5.5			5.5		5.5			5.5			5.5	
TATE	MEAL		3390.0			3466.0		0.0085			A pace			0 000.0	
1111											3389.0		AND DESCRIPTION	3370.0	

GROUND WATER GUALITY DATA BY LOCATION SITE: SHIPROCK 09/28/85 TG 04/22/89 REPORT DATE: 08/03/89

PARAMETER	UNIT JE	632-01 09/20/86 PARAMETER UALUE+/-UNCERTAINITY		6.32-02 09/20/E6 632-03 09/20/86 632-04 09/20/86 PARAMETER PARAMETER UALUE+/-UNCERTAINTY UALUE+/MACERTAINTY	632-04 09/20/86 PAPAMETER UNLINE-/	632-05 09/20/86 PARAMETER VALUE+/-UNCERTAINTY	4 1
TH-230	PCIAL	0.0 0.4	6.1 0.5	0.3 6.6	0.2 0.5	0.0	0.4
THALLICA	MGAL	(0.005	(0.005	\$00.00	(0.005	500.00 }	
TOTAL SOLID	S MG/L	5770.0	5750.0	5700.0	5750.0	5700.0	
URANTUM	H67.	9.0157	0.11	0.11	0.11	0.44	
ZIME	MGAL	0.020	0.020	0.020	0.020	0.020	

STIE: SHIPSOCK
69728785 TO 64727789
REPORT DATE: 66703789

Coloniary Colo	AMETER ALTRITY MINUM MINUM MINUM YELLUM ON MINUM CTUM ORIDE	#EASURE #67L CACO3 #67L CACO3 #67L H67L #67L #67L #67L #67L		The Part of the Party of the Pa			T PHILIPING 1C.D.	THE ICK		THE REAL PROPERTY OF PERSONS	TARREST
Transport CARCOS 428. 44	ALINITY ALINITY INDON'S FRIC IUM YELIUM ON MIDE ORIDE			WEERI GINIT	VALUE + / - UMCER	TAINIY	VALUE +/ -UNCERTAINTY	VALUE + / - UNICERTA	THIN	VALUE +7 -URLE	KIBIRI
HEAL 0.28	ATTRUM ONTON THOUNY THE TON THE TON ON TON ON TON				469.		940	408.		578.	
High Color	ON TUN THONY FINIC TIUM TIUM TIEDE THUM CIUM ON TUN			9	0.28			1.0)		0.5	
High 0,000 0,043 0,044 0,004	HONY ENIC TUN TIDE TIDE STUDE ORIDE	7772777 2222222222	3.6		1.0)		2.2	1.0)		9.0	
Min	ONIC IN THE CONTROL OF THE CONTROL O		0.00	03	0.043			0.006		(0.003	
High Color	A TITUE STUD	772777 22222 22222 22222 22222 22222 22222 2222	0.0	10	0.010			10.00		0.005	
High 0.59 0.52 0.9 0.00	ORIDE ORIDE	8 8 7 7 7 8 8 7 8 7 8 7 8 7 8 7 8 7 8 7	0.0	3	0.02			1.0 >		0	
High Co.59	TION TION TION PRIDE	1877 1877 1877 1877						10.00			
High Cold		767 767 767	0.5	6	0.52		6.0	0.2		0.21	
High 489. 530.005 530.001 459. 530.002 459. 489. 499.	A STOR	#67 #67	0,5		0.03		4	1.0)		•	
High 479 530 374 472 337 472 337 472 337 472 337 472 337 472 337 472 337 472 337 472 337 472 3400 244 247 267 272 27	RIDE HIUM	MG/L MG/L	0.0	95	500.0		100.00 >	0.002		100.00	
High 17.5 16.9 37.5	MIUM.	1/9/	486.		530.		354.	459.		324.	
NEAL	MIUM.		179.		169.		370.	72.		248.	
Name		MGAL	0.0		10.0			10.00		0.05	
The part		MGAL	0.0		10.01			50.00		0.40	
High C	UCTANCE	M3/0HMU	3000.		3500.		10500.	3100.		2400.	
No.	ER	#67L	0.0		0.02		90.0	0.02		0.05	
No.	HDE	MG/L	1					10.00			
Second Perior	IR I DE	#67L	0.3		9.35		8.7	0		0.49	
High	S ALPHA	PEIA	20.	25.	4	34.			23.		
The color	10 GE 18	MC.			24.						
Section Sect		MG/1			0.00		0.04	90.0		0.34	
ESE MGAL	FSIUM	H6/1	249.		244		287	35.01		00.001	
FRUM HGAL (0.0002 (0.0002) - (0.0002) - (0.0002) - (0.0002) - (0.001	MANESE	MG/L	8.43		8.83		0.5	0.03		11.0	
EN HGAL (0.04	URY	MGAL	0.0	302	(0.0002			0.0002			
High	BDENUM	M6/L	0.0		0.14		0.2	10.00		1.0)	
TE HGAL	EL	#67L	0.0		10.0			4 0.04		0.40	
Heart Hear	ATE	MG/L	7.5		0.4		240.	1.5		1.0	
CARBON TG/L 149. 70.9 1.2 34.3	ITE	MGAL	0.1		1.0					1.0	
HATE HSAL 0.5 4.0 0.0 4.2 7.6 0.0 0.6 0.6 0.6 0.7 0.	E NEES	MG/L	, 0,,		10.01						
SULTATION OF TABLE TO THE TABLE TO THE TABLE TO	40	DE171			0.07			34.3		33.8	
HGAL 0.74 8.9	2	. 115	7.00		7 46	7-1	7.1	0.0	0.0	2.0	1.0
PCIAL 0.1 0.8 0.0 0.4 18.1 0.9 0.3 HBA 11.5 0.0 0.3 PCIAL 0.0 0.1 0.1 0.2 13 0.4 0.2 13 0.2 0.9 0.1 0.2 0.0 0.1 0.2 0.0 0.1 0.2 0.0 0.1 0.2 0.0 0.1 0.2 0.0 0.1 0.2 0.0 0.1 0.2 0.0 0.1 0.0 0.1 0.0 0.1 0.0 0.1 0.0 0.1 0.0 0.1 0.0 0.1 0.0 0.1 0.0 0.1 0.0 0.1 0.0 0.1 0.0 0.1 0.0 0.1 0.0 0.1 0.0 0.1 0.1	PHATE	H6/L	0.7.	**	8.9		0.,	7/-0		0.45	
MGAL 14.5 10.4 18.1 9.4 9.4 9.4 9.4 9.4 9.4 9.4 9.4 9.4 9.4 9.4 9.5	10	PEIAL	0.4		0.0	9.0		0.0	0 3	200	* 0
PCIAL 0.0 0.1 0.1 0.2 0.1 0.2 0.0 0.1 0.2 0.0 0.1 0.2 0.2 0.9 0.2 0.0 0.1 0.2 0.0 0.1 0.2 0.0 0.1 0.2 0.0 0.1 0.2 0.0 0.1 0.2 0.0 0.1 0.0 0.1 0.0 0.1 0.0 0.1 0.0 0.1 0.0 0.1 0.0 0.1 0.0 0.1 0.0 0.1 0.1	RSIUM	M6/L	11.5		40.4		13.1	4.0		7.35	;
HI MGAL 0.28 4.3 0.5 2.4 (0.005 0.044 0.7 0.7 0.7 0.7 0.044 0.05 0.044 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	.56	PCIAL	0.0		0.1	0.2		0.0	0.1	9.0	0
HEAL 6-028 6-021 (0.005 (2.011 (2.0	.58	PCIAL	0.2		5.0	2.4		0.5	6.0	0.5	1.2
HG/L (9.1 1754. 640. 7750. (6.04 95 10) HG/L (754. 640. 7750. (7570. 75750. 75750. 75750. (75750. 75750. 75750. 75750. (75750. 75750. 75750. 75750. (75750. 75750. 75750. 75750. (75750. 75750. 75750. 75750. (75750. 75750. 75750. 75750. (75750. 75750. 75750. 75750. (75750. 75750. 75750. 75750. (75750. 75750. 75750. 75750. (75750. 75750. 75750. 75750. (75750. 75750. 75750. 75750. (75750. 75750. 75750. 75750. (75750. 75750. 75750. 75750. (75750. 75750. 75750. 75750. (75750. 75750. 75750. 75750. 75750. (75750. 75750. 75750. 75750. (75750. 75750. 75750. 75750. 75750. (75750. 75750. 75750. 75750. 75750. (75750. 75750. 75750. 75750. 75750. (75750. 75750. 75750. 75750. 75750. (75750. 75750. 75750. 75750. 75750. (75750. 75750. 75750. 75750. 75750. (75750. 75750. 75750. 75750. 75750. (75750. 75750. 75750. 75750. (75750. 75750. 75750. 75750. 75750. (75750. 75750. 75750. 75750. (75750. 75750. 75750. 75750. 75750. (75750. 75750. 75750. 75750. (75750. 75750. 75750. 75750. (75750. 75750. 75750. 75750. 75750. (75750. 75750. 75750. 75750. (75750. 75750. 75750. 75750. 75750. (75750. 75750. 75750. 75750. (75750. 75750. 75750. 75750. (75750. 75750. 75750. 75750. (75750. 75750. 75750. 75750. (75750. 75750. 75750. 75750. (75750. 75750. 75750. 75750. (75750. 75750. 75750. 75750. 75750. (75750. 75750. 75750. 75750. (75750. 75750. 75750. 75750. (75750. 75750. 75750. 75750. (75750. 75750. 75750. 75750. 75750. (75750. 75750. 75750. 75750. (75750. 75750. 75750. 75750. 75750. (75750. 75750. 75750. 75750. (75750. 75750. 75750. 75750. (75750. 75750. 75750. 75750. (75750. 75750. 75750. 75750. (75750. 75750. 75750. 75750. (75750. 75750. 75750. 75750. (75750. 75750. 75750. 75750. (75750. 75750. 75750. 75750. (75750. 75750. 75750. 75750. (75750. 75750. 75750. 75750. (75750. 75750. 75750. 75750. (75750. 75750. 75750. 75750. (75750. 75750. 75750. 75750. (75750. 75750. 75750. 75750. (75750. 75750. 75750. 75750. (75750. 75750. 75750. 75750. (75750. 75750. 75750. 75750. (75750. 75750. 75750. (75750. 75750. 75750. 75750. (75750. 75750. 75750. (75750. 7	HILL	MG/L	0.0	82	0.024		0.005	0.044		200 0 7	
HEAL 754. 640. 7750. (6.04 875. 10H HEAL 3750. (6.04 10.2 10.2 10.2 10.2 10.2 10.3 10.3 10.3 10.3 10.3 10.3 10.3 10.3	EA	m6/L	16.1		17.3			. 2.		12.5	
HGAL 2550. 875. 640. 2750. 875. 40.2 40.2 40.2 40.2 40.2 40.2 40.2 40.	UER	1/9H					1000年の日本	10.01			
HIGAL 32550. 3940. 7570. 7270. 2470. 2	LINE .	M6.7	754.		640.		2750.	875.		.056	
HINT C OCINE C 0.1 C 0.1	101 I OH		9-9	0	4.89			10.2		4.80	
THE C - DETABLE TO C	INC	MC71			3940.		7479.	2499.		2160.	
	TOURSE	F BURBER			1.00			1.0.1			

GROUPED UATER UNALITY DATA BY LUCATION SITE: SHIPROCK 09726/8'S TO 04722/89 REPORT DATE: 08/03/89

		632-01 09/01/87	632-01 11/12/87	633-01 10/04/85	632-01 11/12/87 633-01 10/04/85 633-01 04/19/89	438-01 03/19/87	18/61
PARAMETER	UNIT OF MEASURE	PARAMETER VALUE+/-UNCERTAINTY	PARAMETER VALUE +/-UNCERTAINTY	PARAMETER VALUE +/-UNICERTATHITY	PARAMETER PARAMETER PARAMETER VALUE+/-UNCERTAINTY VALUE+/-UNCERTAINTY	VALUE - / - UNCERTAINTY	TAINTY
TH-236 THALLIUM TIN TOTAL SOLIDS URANIUM VANADIUM ZINC	PCI/L MG/L MG/L MG/L MG/L MG/L MG/L MG/L MG	0.3 0.8 0.496 5480. 0.0093 0.07	0.0 0.4 0.025 5470. 0.0167 0.07	43000. 43000. 7.24 0.3	0.0 0.01 0.032 3650. 0.0260 0.03 (0.005	0.08 4260. 0.0439 0.0439	6.0

STIE: SHIPPOCK.

99728785 10 04722789
REPORT DATE: 06/03789

		日 一 日 日 日 日 日 日 日 日 日 日 日 日 日 日 日 日 日 日		日本日本日本日 日日日日 日日日 日日日 日日日 日日日 日日日 日日日 日日							有有 有 五 五 五 五 五 五 五 五 五 五	***
PARAMETER	UNIT OF MEASURE	PARAMETER VALUE+/-UNCERTAINTY		PARAMETER VALUE+7-UNCERTAINTY	2	PARAMETER	THIE	VALL	PARAMETER		PARAMETER VALUE+/-UNCERTAINTY	RTAINT
ALKALINITY	MG/L CACOS	525		254.		.031			250.	1	604.	
ALUMINUM	MG/L.	90.0		90.0					0.1		0.1	
MUTHOMAA	MG/L	(0.1	~	0.1		4.0			0.4		1.0)	
ANTIMONY	MGAL	9.403	>	6.003	*	6,003		~	0.003		0.003	
ARSENIC	MG/L	0.004		0.000		0.02			0.01		0.005	
BARIUM	M6/L	0.03		0.05	~	0.1		~	0.1		1.0)	
BERYLLIUM	MG/L							~	0.01			
BORON	MG/L	0.44		0.11				•	0.1		99.0	
BROMIDE	MGAL		,	0.1				,	0.1			
CADMIUM	MG/L	0.010	*	90.00	~	0.904			0.002		100.00	
CALCTUM	MG/L	125.		54.3		82.2			113.		483.	
CHLORIDE	MG/L	222.		26.5		41.			.06		225.	
HROMIUM	MGAL	90.0	~	0.01		0.03			0.01		0.03	
CORNET	M6/L	10.0	~	0.01	~	0.05		-	50.0		0.45	
CONDUCTANCE	MJ/OHIMO	3300.		.089		.000		•	700.		3450.	
COPPER	MGAL	10.0	_	0.01	~	0.02			0.05		0.02	
TRAIDE	M6/L								0.01			
TOUR TOT	Mb/L	0.00				0.5				4	0.58	
CRUSS ALPHA	PCIAL			2.0 5.6		£.;	2.0			6.9		
DRUSS BEIR	FCI/L	. 03				1.7	2.5		14.			
FAN	MC74	5.03	•	0.01		4.20			7.08		0.00	
MAGNESTIM	MG/1	43.2		40.3		27.0			33.4		240	
MANGANE SE	MG/L	4.34		1.45					3.40		5 92	
MERCURY	M6/L			0.0007	*	0.0002		,	0.0002		7	
MOR YRDENUM	MG/L	0.03	~	0.01		0.01			0.01		1.0	
MICKEL	MG/L	0.02	*	0.01				,	0.04		0.13	
HITRATE	MGAL	0.4	*	0.1	~	1.0			0.7		1.0	
HIRITE	M67L	1.0)	~	0.1							1.0)	
NB2 & NB3	MG/L				~	1.0			1		1	
. CHREGIE	mov.										8.9	
017-91	PCIAL.	6.0	5	0.0					0.1	.7	1.5	1.3
PHOSPHATE	30	1.77		7.38		6.62			6.70		7.24	
0-240	PE1/4	500			-			,			0.15	
PUTASSTUM	M6/1			3.81		3.6			3.0	*	0.0	0.4
RA-226	PC:/I	0.2					0 0		3.0		0.30	•
RA-228	PCIAL			0.4		0.3	0.7		0.0	7		0.0
SELENTUM	MG/L	11				0.045		,			200 0 7	;
SILICA	MG/L	17.0		14.3					11.		14.9	
SILVER	MGA				~	0.01		~	0.01		-	
SOUTUM	167	.938		137.		138.			268.		1100.	
CHECATE	MC 21	2.10		0.950		1.2			4.2		8.00	
SIN F 18F	ms/1	1370.	*			402.			714.		3900.	
HI MPT RATHRE	C - PFERFF	2.31		10.01		40.00						

GROWN LATER GOALITY DATA BY EDCATION OF 7: SHIPPOCK 09/28/85 TO 04/22/89 REPORT DATE: 08/03/89

PARAHETER	UNIT OF MEASURE	638-01 05/14/87 PARAMETER VALUE+/-UNCERTAINTY	638-01 09725787 PARAMETER VALUE +7-URICERTAINTY	638-01 10/09/88 POSCHETER VALUE+7-UNICERTATHITY	638-0 VAI UE+/	PARAMETER VALUE + / - UNCERTAINTY
TH-230	PCIAL	7. 3.	0.0 6.4	0.0 0.4	0.7	0.0
HALLIUM	MGAL				10.01	
IN	MGAL	(0.005	900.0		(0.005	0.008
OTAL SOLIDS	S MG/L	2770.	656.	822.	1386.	6860.
RANIUM	MGAL	0.0085	0.0024	0.0023	0.0016	0.0370
MUIGOIG	MGAL	0.02	0.02	0.01	0.02	1.0)
INC	MGAL	1.64	0.562	0.661	0.469	6.83

SITE: SHIPPBOCK
09/28/85 TO 64/22/89
REPORT DATE: 06/03/89

FORMATION OF COMPLETION: ALLUVIUM GRADIENT HYDRAULIC FLOW RELATIONSHIP; DOWN GRADIENT

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PARAMETER ALKALINITY ALUBINUM AMMONTUM ANTIMONY ARSENIC BARTUM BORON	THULL OF		日本 田田 日 一日 二日 日 日 日 日 田 田 田 田 田 田 田 田 田 田 田 田 田 田	· · · · · · · · · · · · · · · · · · ·	COMPANY OF THE PARTY AND INC.	-	日本の日本 日本 1年 1年 1日	A contract of the last	The second second	O'S STATE OF REAL PROPERTY.		1000	一日 日 日 日 日 日 日 日 日 日 日 日 日 日 日 日 日 日 日	
KALINITY UNINUM UNINUM UNINUM ITTHONY SENIC RIUM RYLLIUM RON	MEASURE	VALUE	PARAMETER VALUE+7-UNCERTAINTY	PARAMETER VALUE+7-UNICERTATHITY	THIT	עמו נו	PARAMETER VALUE + 7 - UNCERTAINTY	LIBITY	UML	PARAMETER VALUE+/-UNCERTAINTY	RAINTY	עמני	PARAMETER	RAINIA
UPLINUM HONTUM TIMONY SENIC REVIL RYLLIUM RON	MG/L CAC03		604.	604.	1		603.		-	404			350.	
HON TUM TIMONY SENIC RIUM RYLLIUM RON	MGAL		0.1				0.1			0.1			0.13	
TTMONY SENTC RTUM RYLLIUM RON OHIDE	MG/L	~	0.1	(0.1		,	0.1		,	0.1		`	0.4	
SENIC RIUM RYLLIUM RON	MGAL	~	6.003			*	0.003		-	0.003			0.172	
TUM TON TON	MG/L		0.005	1			0.005			0.005			0.003	
TON TON MIDE	MGAL		0.1	,			0.1			0.1			0.03	
MIDE	MG/L			1						1				
MIDE	MG/L		0.61	0.55			0.68			0.39			0.35	
	MG/L													
CADMIUM	MG/L	~	0.001	(0.001		*	0.001		,	0.004			0.025	
CALCIUM	MGAL		485.	485.			487.			487			300	
CHLORIDE	MG/L		249.	249.			249.			220.			82.0	
CHROMIUM	MG/L		0.03	0.03			0.03			0.03			6 43	
COBALT	MG/L		0.43	0.43			0 14			** 0			0.00	
COMPUCTANCE	UMHO/CM	3	3450.	3450.		2	3450			2450			40.00	
COPPER	MG/L		0.02	0.02			0.03			0 02			0.00	
CYANIDE	M6/L									20.06			0.01	
FLUORIDE	MG/L		0.59				0.58			0.50			0 44	
GROSS ALPHA	PCIAL												.0.0	
GROSS BETA	PCI/L													
ROH	MG/L		0.10	0.10			0.40			0. 10			0.22	
EAD	MG/L	,	0.001	100.00)		N.	0.001		,	0.001			0.44	
ANGINE STUM	MG/L		320.	320.			320.			320.			143.	
MANGANESE	H67L		7.00	6.95			6.97			6.93			4.41	
The state of the s	107									1			1	
MULTED ENUM	MG/L			0.1			1.0		·	0.4			90.9	
MITDATE	MC /I	,					21.0			0.12			0.05	
MITRITE	MG/I									0.0			5.7	
HD2 8 ND3	MG/I						1.0			0.1		,	0.1	
ORG. CARBON	MG/L		138.	140			150			671			, 00	
PB-240	PCIAL		1.0	0.0	6.		7 0	4.3			0		19.1	4
	ns.		,	7.24			7.74	:		7.24	0.0		2.40	0.0
PHOSPHATE	MG/L		0.10				0, 10			0 0			2 53	
PO-240	PCL7.		0.0	0.0	0.4		0.0	0 4			4 0		500	0
POTASSIUM	MGAL		•	5.40	100		5.41			5 42			2 40	
RA-226	PCIAL		0.0	0.0	1.0		0.4	0.0			0 0		0.00	<
RA-728	PCIAL		0.1 0.8	0.5	1.0		0.0						0.0	
SELFNIUM	MG/L	,	50	2000		1	0 000		,	0000	7-1		0.0	
SHICA	MGAL		20.3	20.5			20.6			20.9			19.4	
1	110/1													
CTOCALTAIN	H5/1	*	1070.	1070.			1979.			1070.			528.	
SH FATE	M6.71	36,	20.00	7.67			7.95			7.95			3.60	
CHILIDE	HE.1	30					.646.		**	3840.		•	1980.	
THEFT PATERE	C DEGREE		11.0				***							

GROWN UNTER CHANTIY DATA BY LOCATION SITE: SHIPROCK 69728/85 TO 04722/89 HEPORT DATE: 08/93/89

		639-02 03/49/87	639-03 03/49/87	4 10 - SAMPLE 10 AND 639-04 03/19/87	639-03 03/19/87 639-04 03/19/87 639-05 03/19/87	639-01 05/14/87	1
PASAMETER	UNIT OF MEASURE	PARAMETER VALUE+/-UNCERTAINTY	VALUE	PARAMETER VALUE +/-UNCERTAINTY	PARAMETER VALUE + / - UNCERTAINTY	PARAMETER VALUE+/-UNCERTAINT	21
TH-230 THALLIUM TIN TOTAL SOLIDS URANIUM VANABIUM ZINC	PCIA B5A B6A B6A B6A B6A B6A	0.1 0.7 0.010 6820. 6.0311	0.0 0.6 6.040 6820. 0.0344 4 0.1		6.0 0.6 0.010 6820. 0.0281 (0.1	44. 0.005 3240. 0.0409 0.05 2.38	

SITE: SHIPROCK 99728/85 TO 04/22/89 REPORT DATE: 08/03/69

PARAMETER PARAMETER PARAMETER PARAMETER ONLIE PARAMETER ONLIE PARAMETER ONLIE ONLI			639-02 05/14/87	639-03 05/14/87	639-04 05/14/87	639-05 05/14/87	639-01 09/25/87
Marie Monte Mont	MATETER	UNIT OF	PARAMETER VALUE+/-UNCERTAINTY	PARAMETER VALUE+7-UNCERTA:NTY	PAPAMETER VALUE+/-UNCERTAINTY	PARAMETER VALIE +/ THETRIAINTY	PARAMETER
No.	CALINITY			350.	350.	350-	538.
Interface Color	HINIH	MGAL	0.12	0.12	0.13	0.12	6.27
National Color Nati	DNIUM	MGAL	(0.1	4 0.1	1.0)	1.0)	1.0)
	THOM	MGAL	0.472	0.472	0.167	0.172	0.026
Harm High	ENIC	MGAL	0.002	0.002	0.002	0.002	0.032
1. 18 m 16 A	TUR	M6/L	0.03	0.03	0.03	0.03	0.04
He He He He He He He He	YLI TUM	MG/L		4		1	4
March Marc	NO	MGAL	0.34	0.34	0.34	0.34	0.59
High	MIDE	MG/L	T.				1.0)
The color of the	HILL	MG/L	0.024	0.025	0.025	0.025	(0.005
The field 19.17 19.17 19.19 19.20 19.30	CIUM	MG/L	312.	342.	311.	342.	426.
The color The	ORIDE	MG/L	83.1	83.0	83.0	83.1	.891
CLANCE MIGAL MIG	DATE	M6.7	0.42	0.13	0.42	0.12	10.01
Part	MIT	MG/L	0.02	0.02	0.02	0.02	10.0
He His/L 0.04 0.04 0.04 0.04 0.04 0.04 0.04 0.04 0.04 0.04 0.04 0.04 0.04 0.04 0.04 0.04 0.05 0	DUCTANCE	M3/0HM0	1825.	4825.	1825.	4825.	2600.
DE FIGAL 0.66 0.65 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.67 0	PIR	M6/L	0.01	0.04	0.01	0.01	10.00
NETA PIGAL 0.66 0.65 0.23 0.24	TIDE	m67L					
RETA PCIAL 0.23 0.25 0	CHIUE	MG/L	99.0	99.0	99.0	99.0	
STITE HGAL 0.23 0.23 0.23 0.23 0.23 MESE HGAL 45.15 45.26 44.20 MRY HGAL 4.20 4.20 4.20 4.20 MRY HGAL 0.07 0.05 0.05 Late HGAL 0.07 0.05 Late HG	SS ALPHA	PELA	ř.				27. 27.
STUTH HG/L 6.15	H 20 CC	MEZI	22	0 22	2 22		
STUTH HG/L 445.	0	MG/L	0.45	57.0	57.0	67.0	3.80
HEST HIGAL 4.20 4.20 4.20 4.20 4.20 HEST HIGAL 6.07 6.07 6.07 6.07 L	MESTIN	MGAL	145.	145.	145.	144.	267.
Heart Hear	BANESE	H6/L	4.20	4.20	4.20	4.20	6.04
The mode	UNIT	m6/L					0.0003
TE MG/L (0.11 (0.12 (0.13 (0.14 (TBUENUM	M6/L	0.00	0.07	0.07	0.07	0.01
TE HGAL (0.11 (DATE	MC /	6.03	0.03	0.03	50.02	10.0
MB3 MGAL M	RITE	HG/L					0.4
CARRON MG/L 1.4 1.4 1.4 1.4 1.4 1.4 1.4 1.4 1.4 1.4	6 NO3	MG/L				0.1	1.0
PEI/L 1.4 0.9 2.1 0.8 0.9 0.7 0.8 7.40	. CAREON	MG/L	407.	109.	+07.	408	420
SU 7.40 7.40 7.40 7.40 7.40 7.40 7.40 7.40	210	PCIAL			6	3	2.3
FCIA 3.59 3.59 3.58 3.59 3.59 1.50		. ns	7.40				7.26
PCIAL 0.0 0.5 0.0 0.5 0.1 0.5 0.1 0.5 0.1 0.5 0.1 0.5 0.1 0.5 0.1 0.2 0.2 0.2 0.0 0.1 0.2 0.0 0.1 0.2 0.0 0.1 0.2 0.0 0.1 0.2 0.0 0.1 0.2 0.0 0.1 0.2 0.0 0.1	SPHATE	H6/L		3.57	3,58	3.59	0.43
PCI/L 3.16 0.2 0.3 0.2 0.0 0.1 3.16 0.2 PCI/L 0.2 0.0 0.1 0.2 0.0 0.0 0.1 0.2 0.0 0.0 0.1 0.2 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	210	PCIAL		0.			0.0
PCIAL 0-2 1.4 0.2 0.0 1.1 0.2 0.0 0.1 0.2 0.0 0.1 0.2 0.0 0.1 0.2 0.0 0.1 0.2 0.0 0.1 0.0 0.1 0.0 0.0 0.1 0.0 0.0 0.1 0.0 0.0	4551UH	mis/L	•	- 15			
HGAL (0.001 1.2 (0.001 1.1 0.001 HGAL (0.001 1.1 0.001 HGAL (0.001 1.2 (0.001 1.1 0.001 HGAL (0.001 1.2 (0.	920	PLIAL DETA		.3			0.1 0.2
H6AL 495.1 19.001 (9.00	FRITTIM	MC/I					
HEAL 495. HEAL 495. 13.59 13.59 18.40. HEAL 18.40. HEAL 18.40.	IEA IEA	M6/1	40.4	10.0	100.00 }	+ 00.00 +	0.123
MBA 495. 494. 495. 3.57 3.59 3.59 1840. 1840. 1840. 1850. 1850. 1850. 1850. 1850.	UFR	MEA		0.11	1.6.1	18.9	19.0
M6.4 3.57 3.59 3.58 m6.4 1840. 1840. 1840. 1840. 1840. 1840. 1840.	==	M6/1.	495.	494.	495.	569	975
M6/1 1840. 1840. 1840. 1840.	ONTTOM	MG/L	3.57	3,59	3.58	3.58	52.25
NUMBER OFFICE ACT OF THE PERSON OF THE PERSO	1101	707	1840.	1840.	1849.	1840.	3170.
The same of the sa	PUBLISHE	F DEFERE	0 34	* **		, ,	1.0.1

GROWND WATER DUALITY DATA BY LOCATION SITE: SHIPROCK 09/22/85 10 04/22/89 REPORT DATE: 08/03/89

PARAMETER	UNIT OF MEASURE	639-02 05/14/87 PARAMETER VALUE+/-UNCERTAINTY	639-03 05/14/87 PARAMETER VALUE+/-URICERIAIRIY	PARAMETER PARAME	PARAMETER PARAMETER PARAMETER PARAMETER VALUE -/ - UNICERIAINITY VALUE -/ - UNICERTAINITY	639-01 09/25/87 PARAMETER VALUE + / - UNICERTAINTY	S/87
TH-230	PCIAL	1.0 0.1	0.2 0.6	0.4 0.6	0.0 0.5	0.2	8.0
THALLIUM	HG/L						
TIN	MG/L	(0.005	(0.005	500.0)	\$ 0.005	9.0.0	
TOTAL SOLID	S MG/L	3420.	3450.	3060.	3470.	5380.	
MITTHE	MS/I	0.0071	0.0109	0.0093	0.0089	0.0191	
UNNODITIE	HG/i	0.05	0.05	0.00	0.05	0.02	
ZIMC	MG/L	2.55	2.55	2.55	2.55	2.34	

SITE: SHIPEOCK 6972878S TO 64722769 REPORT DATE: 08/03789

FORMATION OF COMPLETION: ALLUVIUM GRADIENT HYDRAUEIC FLOW RELATIONSHIP: DOWN GRADIENT

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PARAMETER	UNIT OF MEASURE	VALUE	PARAMETER VALUE+7-UNCERTAINTY	RAIMIY	VALUE +/	PARAMI TER IE+/-UNCLETAINTY	THIT	PARAMETER VALUE +/ -UNICERTAINTY	TER	VAL	PARAMETER VALUE + 7 - UNCERTAINTY	RAINTY	UAL	PARAMETER VALUE+/-UNCERTAINTY	TER
ALKALINITY	MG/L CACOS		538.			538.		538.	-		538.	-		488	
ALIMINIM	MG/L		0.22			0.21		0.22			0.26			1	
AMMONTUM	M6/L	-	0.1		,	0.1		1.0)		*	0.1		,	0.1	
ANTIMONY	MG/L		900.0			0.007		0.008			0.008			0.013	
ARSENIC	MG/L		0.033			0.034		0.035			0.036			0.04	
BARIUM	MGAL		0.04			0.04		0.04			0.04		~	0.1	
BERYLLIUM	MGAL							1			1			1	
BURON	MG/L		09.0			19.0		69.0			EY 0			,	
BROMIDE	MGAL	~	0.1		,	0.1		0.1		,	0.1				
CADMIUM	MG/L	,	0.005		~	0.005		500.0			0.005		,	0.00	
CALCIUM	MG/L		467.			431.		430.			434			502	
CHI. OR TDE	MG/L		180.			185.		192.			190.			220.	
CHROMIUM	MGAL	~	0.01		,	0.01		10.01		,	0.01			0.45	
COBALT	MGAL	~	0.01		~	0.01		10.01					~	9.05	
COMPUTCTANCE	UMH0/CM	28	2600.		-	2600.		2600.			2600.			1100	
COPPER	MG/L	~	0.01		,	0.01		(0.01		,	0.04		~	0.02	
EYANIDE	MGAL		1												
LUORIDE			0.54			5		0.56			65.0			0.5	
SROSS ALPHA	H		12.	25.			25.	.6	27.		30.	27.		36.	39.
GROSS BETA	PCIAL		33.	21.			22.	36.	23.		8.	23.		34.	19.
ROM	MG/L		2.09			2.09		2.06			2.05			11.7	
EAU CTIIN	M6/L		10.0			0.01		0.01			0.03		~	0.01	
MANGANICE	MG/I		5 71			.007		.000			266.			384.	
FREIRY	MG/I	,	0 0000		,	0.000		2.78			5.80			-	
MIN YRDENIM	MG/I	. ~	0.000		. ~	70.00		2000			20005		-	0.0002	
MICKEL	MGAL	. ~	0.01			0.01		0.04						0.11	
HITRATE	MG/L	~	0.1		,	0.1		(0.1					,	•	
WITRITE	MS/L	>	0.1		*	0.1		1.0)		Y	0.1				
402 & NO3	M6/L												•	1.0	
JEG. CARBON	M6/L		137.			140.		141.			140.				
PB-210	FEIAL		0.7	1.1		1.9	-:	0.3	1.1		1.5	0.0		1	
PH	. 95		7.26			7.26		7.26			7.26			86.9	
SPHAIL	mb/L		0.63			0.37		0.52			0.67		-	0.1	
FB-240	PCIAL		0.0	9.0		0.0	9.0	0.0	0.5		0.0	0.5		1	
PULASSIUM	m67L		90-9	1		7.16		3,33			7.08			8.2	
KA-226	PELA		0.1	0.2		0.1	0.2	0.1	0.2		0.1	0.2		0.1	0
RA-728	PCIA		0.0	2.0		1.0	2.3	0.0	2.5		0.0	2.3		0.2	0.7
CHIENIUM	HIST.		0.129			0.432		0.134			0.142			0.097	
SH UFR	MG/1		16.3			13.2		18.6			18.7				
SOUTH	MC/I		0.0			MAN		2000						0.02	
STRONTIUM	#16/4		7. 7.			coo.		563.			893.			940.	
SHEATE	MG/1	10	3240.		1	3240		25.40			5.35			2.00	
CH F 16F	MGAL	~	1.0		*					No. of Lot, or other Persons in column 2 is not a second	.619.		,	-000	
THE PARTY AS A WASHINGTON						0.1				*					

GROUPED WATER BUNLITY DATA BY LOCATION SITE: SHIPROCK 09/22/85 TO 04/22/89 REPORT DATE: 08/03/89

PARAMETER	UNIT OF MEASURE	PARAMETER VALUE+/-UNCERTAINTY	PARAMETER VALUE+Z-UNCERTALIPTY	A COLUMN TO SERVICE STATE OF THE PARTY OF TH	PARAMETER VALUE +/ - UNCERTAINTY VALUE +/ - UNCERTAINTY	PARAMETER 941 BE+/-UNCERTAINTY	RAINTY
TH-230 THALLIUM TIN TOTAL SOLIDS IN	PCIAL MGAL MGAL NS MGAL MGAL	0.0 0.7 0.024 5620. 0.0247	5610.	0.3 0.6 0.028 5670.	1.3 1.1 0.023 5630.	Married School Co., No. of Co., No. of Co., No.	
MOTO	MGAL	2.03	2.00	2.00	0.08	0.0300	

SITE: SHIPROCK
09728/85 TO 04/22/89
RFFORT DATE: 08/03/89

				日本日日日 日日日日日日日日日日日日日日日日日日日日日日日日日日日日日日日	the party of the p	-	the same name and other part and the Part	NAME AND ADDRESS OF THE OWNER,	CHARLES CO., CO.	日本の一日 日 日 日 日 日 日 日 日 日 日 日 日 日 日 日 日 日 日			*****
PARAMETER	UNIT OF MEASURE	UAL	PARAMETER UALUE+/-UNCERTAIHTY	PAR VALUE+/-U	PARAMETER UALUE+/-UNCESTAINTY	VA	PARAMETER VALUE + 7 - UNICERTAINTY	TAINTY	ראו	PARAMETER VALUE +/-UNCERTAINTY	RAINTY	VALUE +7	PARAMETER
ALKALINITY	MG/L CACE3		422.	823.			742.	-		548.		1853.	
ALUMINUM	HG/L	~	0.1	0.2			0.34		*	0.1		0 >	•
AMMONTUM	MG/L		0.3	0.3		~	1.0			3.0		0)	
ANTIMONY	MG/L		0.008	(0.003	63		0.029			0.043		0 >	0.003
ARSENIC	m6/L		0.02	0.0	90		0.079			0.04		0	.011
BARIUM	MG/L	~	0.4	0.1			0.01		~	0.1		0 1	0.1
BERYLLIUM	M6/L	-	0.04							0.01			
BORON	M6/L		0.5	96.0	9		0.74			0.4		0	0.52
BROMIDE	MG/L	~	0.1	1		,	0.1			6.1			
CADMIUM	M6/L		0.003	0.002	05		0.005			0.007		0 >	0.004
CALCIUM	MG/L		502.	461.			395.			365.		535.	
H OR IDE	MGAL		160.	360.			345.			240.		749.	
HRUMIUM	M6/L		0.01	0.05		~	0.01		,	0.01		0	0.11
UBULI	MG/L	-	50.0	0.5		-	0.01		~	0.05		0	0.33
CUMBUCIANCE	UMHOZEM		3500.	.0005			5500.			4600.		16500.	
CUPPER	me/L		0.05	0.07	1		0.01			0.02		0	60.0
TAMIDE	M6/L		0.01						~	0.01			
LUGRIDE	m6/L		•	05.0	0		05.0			5.0		0	0.44
COUCE OFTA	7/17/						38.	.89		120.	80.		
BOM BEIN	TC1/L		22.0	, ,		,	.02	53.		75.	39.		
FAD	IIC/I	,	0.77	0.11			0.01			2.52		0	0.48
MAGNESTIM	MG/I		348	750		,	10.0		-	10.0		0.0	0.003
MANGANESE	M6/1		4.08	S. S.B.			404			3 26		0001	0.00
MERCHRY	MG/L	~	0.0002			~	0.0002		,	0.0002			
HOI YBDENUM	MG/L	~	0.01	1.0			0.05			0.01		0	
MICKEL	MGAL	~	0.04	0.22	2		0.02			0.04		0	0.39
VITRATE	M6/1.	~	0.1	4.0			3.5			39.		2	9
MITRITE	MGAL		1	1.0)		>	0.1			•		1 0 .1	•
MUZ & NU3	16/L			1 0000			-						
CHERODE.	110/L			.000			168.			147.		295.	
017-9			7.1	1.3	1.3		0.0	1.3		0.0	9.0	•	4.3
PHOSPHATE	WG/I	,	00	5.0			2.73			7.35			25
010-040	DET /1			0.0			20.0			2.0		0	
POTASSTUM	MG/I		6.0	43.4	0.7		24.4	0.8		32.4	0.4	0.0	0.1
RA-226	PCIAL			0.0				0		000		90	
RA-228	PELAL		0.0	0.3	0.8		0.0	1.3		0.5	000		
SELFNIUM	M671		17	0.0			0 725			270 0			
STLICA	M6/L		16.	10.0			11.5			8.		42.	12.1
SILVER	W6/1	~	0.04						*	0.04			
Subjum	167		570.	2330.			2629.			1860.		5760.	
CHIFAIF	MGZI		7.4.1	10.5			67.3			6.9		13.8	8
SHIFTER	HC./1	*		.0///			8190.			6920.		18000	
The section in a water	Carlo and and and and												

GROUND WATER DUALITY DATA E. LOCATION SITE: SHIPPPCK 09/28/ES, TO 04/22/89 RIPORT DATE: 08/03/89

PARAMETER	UNIT OF MEASURE	PARAMETER VALUE+/-UNCERTAINTY	THE RESERVE	PARAMETER VALUE - / - UNCERTAINTY VALUE - / - UNCERTAINTY	PARAMETER PARAMETER PARAMETER PARAMETER VALUE+/-UNCERTAINTY	PARAMETER VALUE+/-UNICERTAINTY
TH-230 THALLTUM TIN TOTAL SOLIDS URANIUM VANADIUM ZINC	PCI/L M6/L M6/L S M6/L M6/L M6/L M6/L	6 0.01 6 0.01 7 5490. 0.0156 0.07 0.350	6.008 45200. 0.0453 (9.1 6.80	0.4 1.2 0.026 12900. 0.462 0.09 3.19	0.0 0.02 0.035 10400. 0.0890 0.07	0.0 4.3 0.040 29900. 4.79 6.97

STIL: SHIFROTK
09728785 TO 04/22789
REPORT DATE: 08/03/69

HEASURE ALKALINITY MGAL CACOS ALUMINUM MGAL ARIUMINUM MGAL ARSENIC MGAL BARIUM MGAL BARIUM MGAL BARIUM MGAL BARIUM MGAL CADDITOR MGAL CADDITOR MGAL COPPER MGAL MGA	457 77 6550	# PARAMETER PARAMETER # 564. 0.42 0.42 0.44 0.049 0.049 0.003 1.20 1.20 0.005 437. 825.	PARAMETER VALUE+7-UNCERTAINTY 2325.	PARAMETER TY UALUE+7-UNCERTAINTY		ER
THITY MGAL THITY MGAL THE MGAL TH	43 43 72 72 650	4564. 6.42 6.42 6.04 6.04 6.03 6.03 6.03 6.03 6.03 8.25 8.25 8.25	2325.		TY VALUE + / - UNCERTAINTY	TAINIT
NUM	43 72 650	0.42 0.049 0.003 0.003 0.005 437.	0.1	4042	640	-
TUM TITC LIUM LIUM TOE TOE OF ALPHA BETA DENUM TE TE TE NO3 CARBON OF HATE OF OF OF OF OF OF OF OF OF O	0.4 0.622 0.003 0.04 0.07 438. 723. 0.24 0.07 6500.	0.049 0.003 0.003 0.003 0.005 439.	0.1	1.0	0.1	
DINY LICE LIUM JOE LUM LIUM JOE JOE ALPHA RETA RETA RETA RETA RETA RETA RETA RET	0.672 0.003 0.04 0.077 438. 723. 0.24 0.07 6500.	0.049 0.003 0.003 1.20 1.20 0.005 439.		1.0)	9.0	
LIUM LIUM LIUM DE UM CTANCE OF IDE ALPHA ALPHA ALPHA BETA BETA RY NO3 CARBON OF NUM L L L L L L L L L L L BETA ACTUM AC	0.003 0.04 0.04 0.077 438. 723. 0.24 0.07 6500.	0.003 0.03 1.20 0.005 439.	0.098	0.048	6 6.003	
LIUM LIUM DDE UM CTANCE RR RP BETA	0.09 0.96 0.077 438. 723. 0.24 0.07 6500.	0.03 20 (0.1 437. 825.	0.32	0.04	0.007	
LIUM ODE UM UM UM UM IDE CTANCE R R ALPHA ALPHA ALPHA BETA R R MO3 CARBON O O SIUM S S S S S S S S S S S S S	0.96 0.077 438. 723. 0.24 0.07 6500.	437. 825.	1.0)	(0.1	4 0 . 1	
DE UM UM UM UM UM I DE CTANCE R P ALPHA BETA BETA BETA BETA NO3 CARBON O O CARBON O CARBON O CARBON O CARBON O CARBON O CARBON O CARBON O CARBON O CARBON O CARBON O CARBON O CARBON O CARBON O CARBON O O CARBON O CARBON O CARBON O CARBON O CARBON O CARBON O CARBON O CARBON O CARBON O CARBON O CARBON O CARBON O CARBON O CARBON O O CARBON O CARBON O CARBON O O CARBON O CARBON O CARBON O CARBON O O O O CARBON O O CARBON O O O O O O O O O O O O O O O O O O	0.96 0.077 438. 723. 0.24 0.07 6500.	4.20 4.00.005 4.37. 8.25.		(0.01		
DE UNI LIDE LIDE LIDE ALPHA BETA BETA BETA NO.3 CARBON CO. STUM NO.3 CARBON CO. STUM NO.3 CARBON CO. STUM CO. S	438. 723. 0.24 0.07 6500.	(0.005 439. 825.	*	0.7	0-10	
UM UM I I I I I I I I I I I I I I I I I I I	438. 723. 0.24 0.07 6500.	437. 825.		1.0)		
UM IDE IT I T I T I T I DE ALPHA BETA B	438. 723. 0.24 0.07 6500.	437. 825.	0.007	0.010	0.001	
TOE CTANCE OF OF ALPHA STUM NESE NY NO3 CARBON OF HATE O STUM NO3 CARBON O O O STUM NO3 CARBON O O O O O O O O O O O O	723. 0.24 0.07 6500.	825.	404.	415.	620.	
TOPE CCTANCE DE DE ALPHA BETA BETA NO3 CARBON OF HATE OF OF HATE OF OF HATE OF OF HATE OF OF OF OF OF OF OF OF OF O	0.24 0.07 6500.	, , , ,	1280.	540.	483.	
T CTANCE DE DE DE LOE DE LOE DE LOE DE NUMBRESE NA VOS CARBON PO DE NUMBRESE NOS PO DE NU	6500.	0.01	0.23	10.01	0.07	
CTANCE R R ALPHA ALPHA BETA BETA BETA NO3 CARBON O HATE O STUM S A R R R R R R R R R R R R R R R R R R	6500.	0.01	0.09	0.02	0.23	
R P DE IDE ALPHA BETA BETA BETA BETA MESE RY PE E L L L L L L L L L L L L L L L L L	0.03	.0009	27500.	10000	11500.	
DE ALPHA BETA BETA BETA BETA MESE RY NO3 CARBON O CARBON O O SIUM B		(0.01	0.03	(0.02	90.0	
IDE ALPHA BETA BETA BETA BETA BETA MESE RY PETE LE				10.01		
ALPHA BETA BETA STUM MESE RY RY L L L L L L L L L L L L L L L L L	0.50	0.52	0.5	0.5	6.30	
BETA BETA STUM WESE NESE NESE NESE NESE NESE NESE NESE	L	750. 170.	1790. 400.	++		
STUM MESE NESE DENUM L TE NO3 CARBON 0 HATE 0 STUM 8		470. 100.		490.	,	
STUM MESE NY DENUM L L L NO3 CARBON O HATE O STUM 8	3.49	(0.01	25	2.19		
STURNESE NY NY DENUM L L L L L L L L L L L L L L L L L L L	0.48	0.03	0.10	0.01	0.001	
NESE RY PRY DENUM DENUM TE NO3 CARBON O HATE O STUM 8	1190.	f353.	2540.	1070.	1280.	
DE NUM DE NUM TE NO3 CARBON O HATE O STUM 8	11.2	14.3		2.31	2.14	
DE RUM L L L L L L L L L NO3 CARBON O HATE O SSIUM B R HM		0.0002	0.0002	0.0002	1	
L L L L L L L L L L L L L L L L L L L	0.30	90.0	0.41	0.00	1.0)	
NO3 NO3 CARBON O NATE O SIUM 8	0.47	0.03		, 0.04	0.26	
NO3 CARBON O HATE O STUM 8	0.1	1.0	0.1 >	0.1	1110.	
CARBON O HATE O SIUM 8	0.1	1.0 }			0.1	
HATE 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	, 007		3.3	, , ,		
w r					45	
w r	3.2	1.1			0.6 3.3	*
	7.40	7.73	7.94	7.60	7.57	
r			1.0			
	0.4	0.9	1		0.0 8.0	0.8
				58.1		
		0.3	0.0 0.2	0.0	0.7 0.4	0.3
	6.1 1.9			0.4		+
	100.00	0.577	1.67	0,105	(0.002	
TOTAL MICH.	18.2	13.0		12.	45.9	
	9501		0.02	10.0		
CTRONITUM MCA	5.200.		7470.	3430.	2480.	
	*****	10.18	16.6	41.4	13.9	
	· Coult	141200.	21000.	12,00.	9470.	
111111	14.0	0.00	77 545	1.0		

GROUND WATER DIMETTY DATA BY LOCATION STITE: SHIPROCK 09/23/85, TO 64/22/83 REPORT DATE: 08/03/89

PARAMETER	UNIT OF MEASURE	644-01 05/14/87 641-01 09/24/87 641-01 10/09/88 641-01 04/18/89 642-01 03/19/87 PARAMETER VALUE+/-UNCFRIGHTY VALUE+/-UNCFRIGHTY VALUE+/-UNCFRIGHTY VALUE+/-UNCFRIGHTY VALUE+/-UNCFRIGHTY	PARAMETER VALUE +7 - UNICERTATUTY VALUE	PARAMETER VALUE */ - HRETERATHIY VALUE *	FARAMETER VALUE +7 - UNITERIATETE VALUE +7 - UNITERIATETER VALUE +7 - UNITERIATETE VALUE +7 - UNITERIATETER VALUE +7 -	642-01 03/19/87 PARAMETER UM: UE-/-UNICERTAINT
TH-230 P THALLIUM TIN TOTAL SOLIDS M URANIUM VANADIUM ZINC	PELAL MGAL NS MGAL NGAL MGAL MGAL MGAL	60.005 72300. 0.487 0.41 6.70	0.052 24300. 1.59 0.13 3.58		0.0 0.02 0.042 19300. 1.31 0.10	3.3 1.5 0.009 21600. 6 0.726 0.726

STITE: SHIPPORE OF SANDARY COCATION STITE: SHIPPORE OF CANADAS TO 04/22/69 REPORT DATE: 08/03/87

2

ENRATION OF COMPLETION: ALLUVIUM GRADIENT HYN MALIC FLOU RELATIONSHIP: DOUR GRADIENT

		642-01 05/29/87	642-04 69/23/87	642-01 04/18/83	643-01 03/19/8/	643-01 07/24/8/
PARAMETER	HEASORE	PARAMETER VALUE - / - UNICERTATIVE	PARAMETER UALUE +7 - UNCERTAINTY	VALUE 47 UNCTREATHER	PARAME CR VALUE + / - UNCERTAINTY	PARAMETER VALUE +/- UNICERTAINTY
	CACAC	CO.	950	8.5.	.22.	1418.
AL LIMITARION			6.53	1.0 >	0.4	0.52
AMMENITUM	MC/1	0.3	7.0	6.3	1.0	5.0
AMIIMONY	MG/I	0.372	0.032	0.048	(0.003	0.442
ARSENIE	MG/1	0.002	6.129	0.05	300.0	0.003
RART'IN	MG/1	0.04	0.02	1.0)	1.0	10.01
BFRYI I THM	HG/L			10.01		
ROBON	MG/I	0.19	0.64	5.0	0.32	97.0
SECONTOF	MG/L		0.2	1.0)		
CADMILLE	MG/I	0.053	(0.005	0.002	100.00	0.003
CALCIUM	MG/L	454.	494.	444.	549.	4/0.
CHI DRIDE	MG/I	348.	836.	720.	3780.	
CHROMITIM	MG/1	0.20	(0.01	10.0	0.14	0.0
CORAL T	M5/1	0.04	0.01	50.0)	07.0	10.01
CONDINCTANCE	UMH0/CH	4500.	7250.	12000.	30500.	10470.
COPPER	MG/L	0.02	0.02	0.03	0.10	0.04
CYANIDE	M6/1			10.01		0 70
FLHURIDE	MG/L	0.37	0.		0.63	
GRISS ALPHA	FCIAL	*	730. 450.	760.		4400. 200.
GROSS BETA	PCIAL				4 37	0
IRON	MG/L	0.13	0.01	0.00	0.004	6.03
EAD	MG/L	0.31	2003	4780	3736.	3153.
MAGNE STEM	H6/L	2 00	2 48	7.77	0.31	2.20
MANGAME SE	167	3.00	0.0002	0.0002		0.0002
MON VOICE MINE	MC/L	0 45	0.03	0.01	6.0	0.02
MICHES MINISTER	MG/I	0.11	0.01	0.04	0.71	9.05
MITRAIF	MG/I	¥30.	2520.	2000.	709.	. 151.
NITRITE	MGAL	1.0)	0.4		1.0	1.0
HOZ & ND3	MGAL				27.00	300
ORG. CARBON	MGAL				24. 2	4.7
PB-240	PCIAL	1.4 0.7	1.1	9.6		
H	. 95	7.45	27.1	, ,	0.30	1.01
PHUSPHAILE	mb/t	400	0 0 0 8	4.0	4.5	2.0 1.4
012-01	MC /I					
FU105510F	ms/L		0 4 0 5			0.0 0.4
RA-726	PC 1/1	2.0	0.0	0.0	6.1 1.3	
CEL CATOM	MC./I		0,	127		0.040
STEER STORY	MC./1	46.3	11.5	.04	12.2	4.99
11 01 0	MG/1			10.0 3		
CODINE	HS./1	1910.	450%	3959.	1,5260.	40454
TENENT THE	M6/1	7.7	4.4	**.*	41.4	0.34
CHITAIL	FIL.1	2770.	11000	1200	36790.	6.4
CHELINE	110.71		6.4		* *	70.0
THEFT PATERIES	C Merri	13-				

FURNATION OF COMPLETION: ALLUVIUM HYDRAIN IC FLOW RELATIONSHIP: DOWN GRADIENT

		28762750 10-249	642-01 05/29/37 642-01 09/23/87 642-01 04/18/89 643-01 03/19/87 543-01 09/24/87	642-61 64/18/89	643-04 03/49/87	643-01 09/24/87
ARAMETER	UNIT OF NEASURE		VALUE +/ THICKETATE /Y VALUE +/ - UPICE RETAINTY	THE PARAMETER VALUE - BECENTARET VALUE		PARAMETER VALUE+7-UNCERTAINTY
5 T	767 A 86 A 86 A 86 A 86 A 86 A	24. 8. 6.605 9380. 6.494 9.08 4.12	0.0 1.0 0.043 26609. 1.32 0.16 1.36	0.0 0.02 0.043 73300. 1.70 0.44 0.344	1.0 1.0 6.048 64200. 4.57 6 0.1	4.4 2.2 6.354 48860. 3.67 6.88 6.205

STIE: SHIPROCK 097/28/85 TO 04/22/89 REPORT DATE: 08/03/89

		10,000	10101	644-01 037 18/87	644-01 65/20/37	C44 01 01/13/8/		84/60/04 10/65/88
PARAMETER	UNIT OF MEASURE	PARAMETER UNI UE+/-UNCERTAINTY	RTAIMIY	PARAMETER UALHE + / - UNCERTAINTY	PAPAMETER UALM • 7 BELTEREY	PARAMETER Y UCLUB */-UNCERTAINTY		PARAMETER
AL KAL INITY	MG/L CACO3	3 4276.		745.	87%	6.7		4.67
AL LIM WITH	MG/L	1.0)		1.0	0.45	6.54		- 10
AMMONTON	MG/L	2.0		0.5	0.9	1.3		0.4
ANTIMONY	MG/L.	660.0		(0.003	0.742	0.039		0.046
ARSENIC	MG/I	0.02		0.017	200.0	0.002		0.45
BARIUM	MG/L	1.0)		(0.1	0.01	0.05	,	9.4
BERYLL TUM	#67L	10.01						
BORON	MGAL	0.5		0.13	9.56	6.73		
BROMIDE	MG/L	0.2				6 0.1		
CADMILLIM	MG/L	0.002		4 0.001	0.117	0.005		0 003
CALCTUM	MG/L	376.		547.	441.	507		278
CHI ORIDE	MG/L	1200.		1310.	1210.	+180		070
CHROMIUM	MGA	10.01		0.44	6.74	, 0 0		0,00
UBAL I	MG/L	(0.05		0.40	0.43	******		0 00
COMPLICTANCE	UNHO/CM	13500.		20000	40000	7500		60.00
COPPER	MG/L	0.05		0, 10	0.05	0.04		0 00
CYANTDE	MG/L	10.01			50	0.00		0.03
FLUMRIDE	MGAL	9.0		0.46	0.47	0.0		200
GROSS ALPHA	1/134	1300.	300					
GRIDSS BETA	PCIAL	570.	100.			440. 490		246 36
IRON	MG/L	87.0		0.54	0.23	0		
F AD	MG/L	10.0		6 0.001	9.76	0.04		0.02
HAGNE STUM	MG/1.	1700.		3000.	3050.	3253.		2046.
Martinaria SE	mG/L	2.59		0.37	1.66	2.58		
WILLIAM TO THE PROPERTY OF	May 2	2000.0				0.0004	~	0.0002
NICKEI	ME/I	0.00		4.0 3	0.50	50.0		0.31
MITERATE	MC/I	430		34.0	97.0	20.0		
MITRITE	MG/I	.00.		12.10.	. 1700.	5320.		3450.
MO2 6 MO3	M6/1					6.3		
ORG. CARBON	MGAL	344.		207.	427.	***		.80.
PB-210	PCIA	1.2	1.3	17. 2.	2.5 0.7			
	. as	7.37				7 42		* **
PHOSPHATE	m6/L	0.2		0.40	14.0	4.03		,,,,
F3-240	PC1/L	1,6	8.0	8.0 0.0	0.0			
POTASSIUM	MG/L	33.9				34.3		40 9
RA-226	PCIAL	0.0	0.1			0.00		
KA 228	PCIAL	4.0	8.0	0.7 1.3	0.1	0.0		0.0
MILERINA	M6/1	0.468				0.824		
SH IEA	V3E			12.0	48.5	10.1		201.0
- Charles	11171	10'0'						0.02
CIRCIPIT TITM	MIC 21	5110.		3000.	5490.	6470.	20	3990.
211 FATE	MC 3	7.00		27.4	16.3	17.5		64.0
CHITIN	HC.1	100		1com.	24400.	21396.	1.3	1739C.
Total California	F INTERNET							

STIE: SHIPEBOCK
09728/05 TO 04/22/09
REPORE DATE: 08/03/09

	UNIT OF	643-01 04/18/89	687	•	PARAMETER	187	644-01 03/18/87 (44-01 05/20/87 644-01 09/23/87 644-01 10/09/88 PARAMETER PA	644-01 10/09/88 PARAMETER VALUE +/ - INCERTAINTY	#ETER CERTAINTY
PARAMETER		VALUE 1/ - UNICE KIN		Vin Cil vy Charles India		-			
TH-230	PCIAL	0.0	9.0	6.3 0.8	50. 40.	0.	4.1 2.4	• 0 .	9.0
THAI LIM	MC/!	0.05			1				
TIM	MC./E	0.043		0.012	0.005		0.268		
TOTAL SOLID	MG/I	28700.		43160.	41700.		39900.	27000.	
HILLIAM	MC/1	1.82		1.63	0.785,		1.41	1.13	
MITOMOTIN	MC/1	0.12		0.1	0.20		0.20	0.45	
7 IMC	MG/1	0.033		4.52	3.99		2.25	1.12	

STIE: SHIPEDER 09/22/189 87 LDCATION STIE: SHIPEDER 09/28/185 10 04/22/189 REPORT DATE: 06/03/199

W S E				644-01 04/18/89	670-01-01/20/88	6/0-01 03/31/88	670-01 05/17/88	88760701 10-029
March CACOTA S.271	PARAMETER	UNIT OF MEASURE	PARAM VALUE • / - UNC	FTER	PARAMETER VALUE +7 - UNCLETATREE	PARAM IFR	PARAMETER VALUE + 7 - UNCERTAINTY	PARAMETER VALUE + / - GMCERTA
Heart 1.4 0.15 0.16 0.15 0.15 0.10	AL KAL INITY	MG/L CACOS	55		377.		772	247
	HIMIM	MG/L	4 0.1			0.15		
	HUNTING	MG/L	4.4		(0.1	1 0 1	1.0)	0.7
	IMONY	MG/L	0.047					0.003
15.0 0.01 1.00	ENIC	MG/L	0.04		6.000	0.010	0.007	0.02
150.1 0.501 1.502 1.502 1.503 1.50	-	MG/L	1.0)					. 0
Mark	YLL TUM	M6/L	10.01					
HEAT	200	MG/L	0.5					•
HEAT 470.004 3593. 343. 276. 490.004 180.	MIDE	M6/.	1.0)					•
HEAT S80. 373. 373. 276.	HILL	MG/L	0.004					,000
HE 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,	CIUM	MGAL	429.		358.	343.	27.6	200.00
HEALT C 0.061 C 0.061 C 0.061 C 0.061 C 0.061 C 0.062 C 0.06	ORIDE	M6/1	580.		62.2	.40	36.	
Color Colo	DHIUM	MGAL	10.01				.00	99.
Color Colo	AL T	M6/L	0.05					0.00
High Cold	DUCTANCE	UMHO/CH	4400		4700			50.00
Fig.	PER	M6/1	0.03				1450.	1250.
The color	HIDE	MG/I	10.0					20.00
FELIA 1490. 290. 31. 15.	ORIDE	M5/1	0.5		0 40	0.0		
FETA PCLIA 490. 80. 13. 7. 15. 1	SS ALPHA	PCIA	1400.	200			0.48	6.6
HEAL	SS BETA	PCIAL	490.	80				
HEAL (90.01 147. 944.2 84.6 66.4 66.4 147. 944.2 84.6 66.4 66.4 147. 944.2 84.6 66.4 147. 944.2 84.6 66.4 147. 944.2 84.6 66.4 147. 944.2 84.6 66.4 147. 944.2 84.6 66.4 147. 944.2 84.6 66.4 147. 944.2 84.6 66.4 147. 947. 947. 947. 947. 947. 947. 947. 9		M6/1	16.0					
HEAL	0	MG/L	10.01					19.0
SE MGAL 1.91 1.91 1.91 1.91 1.91 1.91 1.91 1.91 1.91 1.91 1.91 1.91 1.91 1.91 1.91 1.91 1.91 1.91 1.91 1.92 1.11 1.92 1.11 1.92 1.11 1.92 1.11 1.92 1.11 1.92 1.11 1.92 1.	MI STUM	MG/L	1430.		117.	94.7	2 40	
NUM 1671 0.0002 0.06 0.001 0.001 0.002 NUM 1671 0.004 1.2 1.1 2.3 1.0 NUM 1671 0.004 1.2 1.1 2.3 1.0 NUM 1671 0.004 1.2 1.1 2.3 1.0 NUM 1671 0.02 0.4 1.0 0.0 1.1 2.3 1.0 NUM 1671 0.04 0.04 0.0 1.1 2.3 1.0 NUM 1671 0.07 0.04 0.07 0.0 0.1 2.33 0.04 NUM 1671 0.07 0.04 0.07 0.0 0.1 2.33 0.04 NUM 1671 0.07 0.04 0.06 0.0 0.0 0.0 NUM 1671 0.07 0.04 0.06 0.0 0.0 NUM 1671 0.07 0.07 0.04 0.06 0.00 NUM 1671 0.07 0.07 0.07 0.07 NUM 1671 0.07 0.07 0.07 0.07 0.07 0.07 NUM 1671 0.07 0.07 0.07 0.07 0.07 0.07 NUM 1671 0.07 0.07 0.07 0.07 0.07 0.07 0.07 NUM 1671 0.07 0.07 0.07 0.07 0.07 0.07 0.07 0.07 NUM 1671 0.07 0.07 0.07 0.07 0.07 0.07 0.07 0.07	GAMESE	MG/1	1.91				0.1.0	6.00
HEAT	HRY	#67L	00000	2				20000
HEAL	YRDE NUM	MG/1	10.01		90.0	10.00	0.01	0.02
HGAL 2200.	CE.	MG/L	0.04					
## ## ## ## ## ## ## ## ## ## ## ## ##	RATE	MGAL	2200.		1.2	1.1	2.3	0.1
15.0 15.1 15.2 15.0 1.1 1.0 1.1 1.0 1.0 1.1 1.0 1.0 1.1 1.0	RITE	H6/1			1.0)			
TEAL 0.0 1.1 7.47 6.88 TEAL 0.1 0.4 4.30 0.6 1.1 7.47 6.88 TEAL 0.1 0.4 4.30 0.6 0.6 7.99 0.6 9.1 7.47 6.88 TEAL 0.091 0.0 0.1 7.99 0.6 9.1 9.1 9.1 9.1 9.1 9.1 9.1 9.1 9.1 9.1	& NU3	1/9u				0.3	2.3	6.4
STATE Co.	- Committee	me/c	163.			107.		
The mean	2 10	FL1/L	2.0	0.0			4	
FELTA 0.23 0.4 4.30 0.6 5.33 5.4 5.4 0.0 0.6 5.33 5.4 5.4 0.0 0.0 0.1 5.33 5.4 5.4 0.0 0.0 0.1 5.33 5.4 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	CPHATE		29.7		7.08	*	7.47	6.88
UM MGAL 39.0 0.4 4.30 0.0 0.6 2.33 5.4 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	2 40	Dr. 1.0	0.1					1.0 1
FCTAL 0.0 0.1 4.30 0.0 0.1 2.33 5.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	Accrim	HC.	2000	0.4				
FCEAT 0.09 0.1 0.09 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	200	DC1.4	37.0		4.70		2.33	5.4
HEAT (26.40 0.094 0.095 0.09 0.095	228	PCTA	0.0	0.0				0.0
HIGAL (0.008 (172.6	FUTUE	MCA	4 00 0		*****			9.0
HISA (0.04 172.6 172.6 172.7	ICA	MC/1	***		40.01	210.0	0.000	0.045
HEAL 26.16. 1310. 1510. 1510. 1510. 1510.	ULK	MC/1	0 00		7.71	12.6	6.64	
HEAL HOSSO. 1310. 1310. 1410.	HIII	MG/1	24.40		242			10.00
HSAL 16250. 1310. 1310. 946.	TORU TURN	MG/1	0.3		34.3	177.	622.	116.
HIS/1 C 0.1	FATT	11.07	10000		1340	****		2.2
	f 11st	M:/1	0.1				714.	673.

SITE: SHIPBURK 09728/65 TO 04/22/89 REPORT DATE: 08/03/89

0.000	UNIT OF	PARAMETER	670-01 01/20/88 PARAMETER UNITE -/ EDITE TATALISTY	PARAMETER	644-01 04/18/39 670-01 01/20/88 670-01 03/31/58 670-01 05/17/88 670-01 10/09/58 PARAMETER PARAM	PARAMETER VALUE - / - UNCERTAINTY	83 1
THE MAN TO A STATE OF THE STATE	Total some					NAME OF TAXABLE PARTY O	1
TH-230	PCIAL	0.0 0.4		0.0 0.4		0.0	6.9
THALLTUM	MGAL	0.01					
TIN	MG/L	6.033					
THIM SOLID	S MG/L	19200.	2440.	2110.	1790.	1360.	
INCATIN	MGAL	1.14	0.0207	0.0237	0.0093	0.0064	
UNMADIUM H	MGAL	0.13	0.05	0.05	5.03	0.03	
ZIMC	MG/L	0.424				0.730	

SITE: SHIPMORK 99728/85 +0 04/22/89 REFORT BATH: 05/03/89

		-	670-01 04/21/89	671-01 04/20/88	671-01 03/31/88	6/1-01 05/1//88	BE/60/01 10-1/9
PARAMETER	UNIT OF MEASURE	NA	PARAMETER VALUE + 7 - UNCERTAINTY	VALUE + / - UNITERIATIVE	VALUE UNCERTAINTY	PARAMETER VALUE +/- JRECKTAINTY	VALUE +/-UNCERTAINT
ALKAL INTTY	MGAL CACOS	1 50	338.	379.		SAS.	470
AL UM I NUM	MG/L	*	1.0		9.45		
AMMONTOR	MG/L		9.6	0.1	9.0	++	40
ANTIMONY	MGAL	,	0.003				0.003
ARSENIC	M6/L	+	0.01	0.003	0.040	0.010	0.02
BARTUM	MGAL	*	1.0				. 0 .
BERYLLIUM	MGAL	*	0.01				
BORON	MG/L		9.2	1			
BROWIDE	MG/L	*	1.0				
CADMIDA	MG/L		0.000				0.001
CALCIUM	MGAL		300.	534.	327.	284.	474.
CHLORIDE	MCAL		36.	469.	250.	92.	34.
CHROMIUM	MG/L	*	0.01	*			0.04
COBALT	MG/L	*	0.05				(0.05
CONDUCTANCE	UMHO/CH		1350.	2900.		2700.	1425.
COPPER	m6/L	~	9.02			10000000000000000000000000000000000000	4 0.02
CYANIDE	MG/L	*	0.01				
FLUGRIDE	MG/L			0.47	0.57	0.58	0.5
GROSS ALPHA	PCIAL				47. 34.		
GRUSS BEIR	PULL		12.		49. 48.		49.
EAD	H67		1.07		*		2.02
MACONE DE FINA	- TO 75						0.00
HANGARESE	MG/I		3.80		137.	114.	80.3
MCRCIRY	1/54	,	0.0002				
MON YBDE NUM	MGAL		0.01	0.11	0 00	0.01	20002
MICKEL	MG/L	*	0.04				6.03
NITRAIE	MGAL		0.4	141.	1.7	2.0	0.1
VITRITE	MG/L			6 9.1			
NOZ & NO3	HGA				6.0	2.0	6.4
INCO. CAREGO	m6/L				211.		
04.Z-8.	PCIA		0.0		6.4 4.2		
PHOSPHATE	200 MCA	,	2.45	7.51	1	7.61	7.96
PH-240	PC1/4		0.0				1 0 1
POTASSIUM	MS/I			24 4	6.0		
RA-226	PEIA					14.5	
822-Vd	PETAL		0.2 0.7		0.2 0.8		0.0
STLENTIN	MG/L		111	0.064		1000	
SHIFA	MG/A		17.	45.4	26.0	24.4	0.000
STEVER	M6/1	,	10.01				10.0)
CTRONTINE	757		128.	1133.	2007.	434.	176.
SHEFAIF	MG/1		1330	27-6	-		7.4
304 T 113F	MGAL		1.1	•		1398.	643.
HI WEI BATTIET	C DICREE	3	13.	0.5		-44-	26.

GROIND WATER UNALITY DATA BY LUCATION STIE: SHIPSOKK 09/28/85, TO 04/22/89 REFORT DATE: 63/03/89

PARAMETER	UNIT OF MEASURE	PARAMETER VALUE+/-IMCERIAINTY	VALUE + / SHUER TABINTY	VALUE .		PARAMETER VALIE*/-IMCERTALIVI	R
TH-230 THALLIUM H TIN H TOTAL SOLIDS H URANIUM H VANADIUM	7517 767 767 767 767 767 767	6 0.00 6 0.005 7700. 9.0048	5486.	6.4 9.6 8860. 9.0287 6.06	2639.		0.5

STIE: SHIPROCK
09/28/85 16 04/22/89
RIFORT DATE: 08/03/89

UNIT OF PARAMETER VALUE+/-UNCERTAINTY VALUE			1	671-01 34/21/89	672-01 01/20/88	01/20/88 6/2-01 03/31/88 6/2-01 05/1/88		88/40/01 10-2/9
Marie Mari	PARAMETER	UNIT OF MEASURE	NA.	PARAMETER UE+/-UNCERTAINTY	VALUE +/	PARCHETER ON VALUE AT A UNITER STATE		PARAMETER VALUE » / - UNITERTATIN
Min 1674 2.2 0.44 0.49 0.49 0.40 0.	ALKAL INITY			554.	404.	-	416.	.325.
	HINDH	MGAL	~	0.1		0.09		
Heart Cooke Cook	HONING	MGAL		2.2	1.0)	1.0 1	1.0)	0.2
	LIMONY	MG/L		0.004				(0.003
Title 150.4 0.04	SENIC	M6/L	-	0.01	0.002	0.005	6.003	0.05
	HILL	HG/L	~	0.1				1.0 ,
The color The	THETTIME	MGAL	•	0.01				4
Min	HOH	MG/L		0.3				10.01
HEAT 360,007 472, 174, 245, 138,	MIDE	MG/L	~	0.1				
10	HIIM	MGAL		0.007				100.00
The first control 1,6,2 25,6 1,6,2 25,6 1,6,5 1,	CTUM	MG/L		360.	432.	174.	245.	138.
Title His Co Co Co Co Co Co Co C	ORIDE	MG/L		54.	76.2	75.	30.	20.
CTANCE Mish CTO CO CO CO CO CO CO C	OMIGN	M6/L	-	10.0				0.04
Control Cont	MIT	MGAL	~	0.05				4 0.05
The color	DUCTANCE	M3/OHMI		1700.	2350.		1550.	.0009
10	PER	MGAL	~	0.05				6 0.02
No.	MIDE	MG/L	*	0.01				
STUME STATE STAT	ORIDE	MG/L			0.73		0.56	9.0
Strict S	SS ALPHA	PCIA						
STUTH MISAL C 0.00 C	ISS BEIG	1/1/r						
Stury High 108. 12.4 108. 12.4 10.2 10.000 10.00		MG/1	,	0.00		1		3.88
No.	MESTUR	M6/L		108	45.4	2 75	72.4	
No color C	IGAME SE	MG/L		2.11				7-0-
The color	CURY	MGAL	~	0.9902	10000000000000000000000000000000000000			4 0.0002
	YBDENIM	MG/L.	*	0.01	0.40	١٥٠٥ ٢	0.02	0.05
High High O.7 4.7 4.7 4.5 4.0	KEL	MG/L	*	0.04				
NOT HEAL 100. 0.5 1.0	RATE	M6/L		0.7	4.9	1.7	6.5	0.4 ,
CARGON HGAL CARGO	M. I. I.	H6/L			1.0)			
HATE MGAL (0.1 0.2 0.7 7.27 0.4 0.6 4.1 7.58 6.93 HATE MGAL (0.1 0.3 8.64 0.6 7.15 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1	CADDON	Mb/L				6.0	5.0	0.4
SEPHATE NGAL Co.4	240	PETA		,		116.		
SPHATE HGAL (0.4						0.0		
240 PET/1 0.0 0.3 8.64 0.6 7.45 0.6 7.45 0.0 0.3 3.3 4.42 0.0 0.6 7.45 0.0 0.0 0.3 3.3 4.42 0.0 0.4 0.6 7.45 0.0 0.0 0.3 3.3 0.0 0.0 0.0 0.0 0.0 0.0	SPHATE	MG/I	*		/7./		1.58	6.93
ASSIUM MGAL 10.5 8.64 4.42 7.15 3.3 9.0 9.0 9.0 9.0 9.0 9.0 9.0 9.0 9.0 9.0	240	PELA						1.0
226 PCIAL 0.6 0.9 0.1 0.6 0.1 0.0 0.1 0.0 0.1 0.0 0.0 0.1 0.0 0.0	ASSIUM	MG/L						
228 PCIAL 0.6 0.9 0.34 0.09 0.34 0.09 0.39 0.004 0.034 0.008 0.004	226	PCIAL						
HEAL 0.044 0.034 0.008 0.004 0	228	PCIAL						
HIGA (20. 45.2 47.9 48.3 (18.3 4 18.3 4 18.3 4 18.4 (18.3 4 18.3 4 18.4 (18.4 18.4 18.4 18.4 18.4 18.4 18.4 18.4	FNIUM	MG/L		14				
HEAT (573. (39. (59. (50. (49. (49. (49. (49. (49. (49. (49. (49	ICA	mG/L		.02	15.2	17.9	48.3	0.011
HEAT 176. 573. 139. 159. 159. 159. 159. 159. 159. 159. 15	VE R	HG/L	*	0.01				, 0.01
HGA (260. 1970. (977). (607. 649. 1970. (6.1	E I	HG/L		176.	573.	439.	150.	96.
HEAT (1007. 1470. CO.1	FAIL	#C.74		1.7	******			4.4
THE C DICELL AV	FIRE	MCA		1,000.	1970.	. 707	649.	413.
	THE RATIO			**	0.0	1.00		

SITE: SHIPPPOR 09/22/69 PEPORT DATE: 68/22/69 PEPORT DATE: 68/03/59

FORMATION OF COMPLETIONS ALLIVATUM GRADIENT HYDRAULIC FLOW RELATIONSHIP: DOWN GRADIENT

PARAMETER	UNIT OF	PAR VALUE+/-U	PARAMETER VALUE+/-UNCERTAINTY		PARAMETER VALUE */ - UNICE REGISTER	04/20/88 672-04 03/31/88 672-04 05/47/88 672-04 40/09/88 MITTER PARAMETER PARAMETER PARAMETER ETFIGIRITY VALUE */ UNITERTATINTY VALUE */ UNITERTAINTY	A72-04 04/20/88 672-04 03/34/88 672-04 05/47/88 672-04 40/09/88 PARAMETER PARAMETER PARAMETER ALUE -/ UNCERTAINTY VALUE -/ UNCERTAINTY VALUE -/ - UNCERTAINTY
TH-230 THALLTUM THALLTUM TOTAL SOLIDS URANTUM VANADIUS ZINC	5 167 167 167 167 167 167	2340. 2340. 0.0145	95	3540.	1326. 0.0151 0.03	1440. 0.0422 0.04	942. 962. 9.0074 0.072

0

GREEFIND WATER GUZZITY DATA BY LOCATION SITE: SHERGER 69722/85 TO 04722/89 REPORT DATE: 08/63/89

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672-01 04/22/89		DABAMETE
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PARAMETER PARA			1	672-61 04/22/89	THE COLD COME OF THE COLD COLD COLD COLD COLD COLD COLD COLD	The first of	
Tity MEAL CACCOS 345.	PARAMETER	HEASURE	2	PARAMETER ALUE+/-UNCERTAINT	PAPAMETER VALUE + / - UNICE RIGINITY	PARAMETER	PARAMETER
HGAL 0.01 0.04	ALKALINITY	MGAL CACO	6	345.			THE PARTY OF THE P
HGAL	ALUMINUM	MG/L	~	0.1			
HEAL 0.00-1 10.0	MULNOMING	MGAL	~	0.4			
100 100	ABCENTE	m6/L		0.00-0			
HEAL 0.04 1.0 1.	BARIUM	MG/L		0.01			
HGAL 0.092 HGAL 0.092 HGAL 0.092 HGAL 0.093 HGAL 0.094 HGAL 0.095 HGAL	BERYLL THE	MGA					
HGAL	RURUN	MG/I					
HGAL 0.002 HGAL 143.	BROMIDE	MGAI	,				
HGAL	CADMILIE	MG/1		0.000			
HGAL	CALCTIM	HC/I		****			
MGA	CHLORIDE	MG/L		- 603-			
MUCE UNHOUCH (0.05 MICH UNHOUCH (950. MICH (0.04) MICH (9.04)	CHROMIUM	MG/L	*	***			
MUCE UNHOCKS 950. MGAL (0.05	COBALT	MG/L	*	0 00			
HGAL (0.02 HGAL (0.04 HGAL (CONDUCTANCE	UMHO/CK		020			
MGA	COPPER	MGAL	*	0.62			
HGAL 0.6 14.	CYANIDE	MG/L	*	0.01			
FIA PCIAL 14. TA PCIAL 16. MGAL 5.78 MGAL 6.001 MGAL 6.002 UN MGAL 6.002 MGAL 6.004 MGAL 6.006	FLUORIDE	MG/L		9.6			
TA PCIAL FG. 5.78 HGAL C. 5.78 HGAL C. 0.01 HGAL C. 0.02 HGAL C. 0.02 HGAL C. 0.04 HGAL C. 0.06	GROSS ALPHA	PCIAL					
HGAL 6.001 HGAL 72.78 HGAL 6.0002 HGAL 6.0002 HGAL 6.004 HGAL 6.004 HGAL 6.004 HGAL 6.004 HGAL 6.004 HGAL 6.004 HGAL 6.00 HGAL 6.00 HGAL 6.00 HGAL 6.00 HGAL 6.00 HGAL 6.00 HGAL 6.004	25	PCIAL					
## #674	IRON	MGAL		8.			
## #674 \$3.8 ## #674 \$2.19 ## #674 \$0.002 ## #674 \$0.004 ## #674 \$0.004 ## #674 \$0.004 ## #674 \$0.005 #	FAD	MGAL	•	0.01			
## #674	HABBE STUM	MG/L		53.8			
## #674 0.002 ## #674 0.004 ## #674 0.004 ## #674 0.00 ## #674 0.00 ## #674 0.00 ## #674 0.00 ## #674 0.005 ## #674 0.005 ## ## #674 0.005 ## ## #674 0.005 ## ## #674 0.005 ## ## ## ## ## ## ## ## ## ## ## ## ##	MERCHANE SE	MG/L		2.19			
### ### ### ### ### #### #### ########	MOI SORE	M6/L	~	0.0002			
#674 6.04 #674 6.7 #674 6.7 #674 6.0 #674 6.0 #674 6.0 #674 6.0 #674 6.0 #674 6.0 #674 6.0 #674 6.0 #674 6.0 #674 6.0 #674 6.0 #674 6.0 #674 6.0 #674 6.0 #674 6.0 #674 6.0 #674 6.0 #674 6.0 #674 6.0	MILESON MILESON	M6/L		20.0			
3 M6AL	MITDATE	167.	*	0.04			
3 M6AL 57.8 80N M6AL 57.8 80L M6AL 57.8 80L SU 7.33 8 M6AL 6.0 8 NCIAL 6.0 8 NCIAL 6.0 8 M6AL 7.3 8 M6AL 7.0 8	WITEITE	110/E		0.7			
BON HGAL 57.48 PCIAL 0.00 SU 7.33 F HGAL 0.00 PCIAL 0.00 PCIAL 0.00 PCIAL 0.00 HGAL 0.00 HGAL 0.00 HGAL 0.005 HGAL 0.005 HGAL 0.005 HGAL 0.005 HGAL 0.005 HGAL 0.005	ND2 & ND3	MG/L					
FCIA 0.0 SU 7.33 FCIA 0.0 FCIA 0.	DRG. CARRON	MC /1					
E H6A (2.33 PCIA (2.33	98-240	PETA					
F H6A () . 33 FCIA () . 9. 9 FCIA () . 9 FCIA (. н.	CII					
PCIA MGA PCIA PCIA PCIA PCIA MGA MGA MGA MGA MGA MGA MGA MG	HOSPHATE	HG/I	,	1.33			
# #67. 9.9 PCIA 9.9 #67. 0.065 #67. 0.065 #67. 0.065 #67. 0.065 #67. 0.065 #67. 0.065	70-210	PETA					
PCIA PCIA MGA 0.00 MGA 4.00 MGA 6.00 MGA 70.00 MGA 70.00 MGA 70.00 MGA 70.00	POTASSTUM	MG/I					
MEA 0.005 MEA 0.005 MEA 17. MEA 0.005 MEA 0.005 MEA 0.005 MEA 0.005 MEA 0.005 MEA 0.005	14-226	PC1/4		0.0			
MEA 0.005 MEA 17. MEA 0.005 MEA 0.005 MEA 0.005 MEA 0.005 MEA 0.005	4A-228	PCIAL					
M6.71 (FLENTUM	MS/I					
MGAL C	SHIEA	M6/1					
MGAL MGAL MGAL	STUDER	MG/I	~				
UM MSAL MSAL 48	SODIUM	MG/L		.00			
HS/L 48	STRUBITUM	M67L		1.4			
HG.7	MIGHE	MGAL		487.			
	WH I HA	MG/1	*	0.4			

GROWN WATER QUALITY DATA BY LOCATION SITE: SHIPROCK 09/28/6% TO 04/22/89 REPORT DATE: 08/03/89

FORMATION OF COMPLETION: ALLUVIUM
HYDRAULIC FLOW RELATIONSHIP: DOWN GRADIENT

		672-01 04/	22/89	LOCATIO	IN ID - SAMPLE ID AND L	OG DATE	
PARAMETER	UNIT OF MEASURE	PARAMET VALUE+/-UNCER					
March 2 1 March 2011	PCI/L MG/L MG/L	0.4 (0.01 (0.005 4080. 0.0079 0.03 1.27	0.5				

MAPPER DATA FILE NAME: SHP01#UDPGUQ103097