
PRS 21-011(k)

**Former Outfall and Drainage Area
TA-21
SRS Score = 72
HSWA Module**



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ER 2000-0457 VG-00-000(1)

Slide 1



HSWA MANT 1/10/06/21-011(k)

21

PRS Description

- **Former NPDES outfall and drainage area from industrial WWTPs at TA-21**
- **Discharges to outfall discontinued in early 1990s**
- **PRS investigated in 1988, 1992, and 1993**
 - ◆ **Remaining COPCs include only radionuclides**
- **Northern portion of PRS considered to be in a water course, DP Canyon**



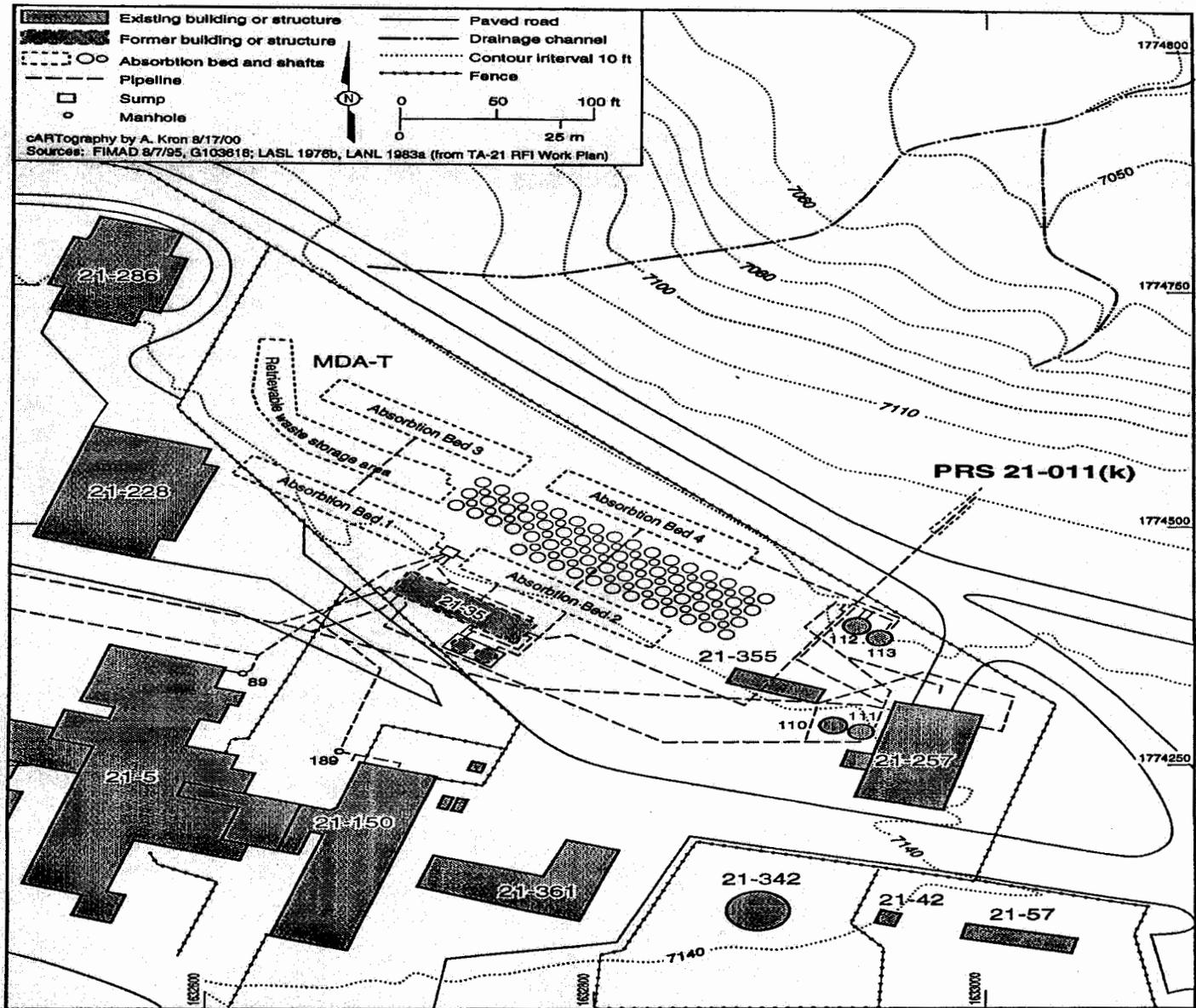


Figure 1-1 Location of PRS 21-011(k)

PRS Description (concluded)

- On list of 684 PRSs in or near water courses
- Slope ranges from near vertical just below outfall to 20% near bottom of drainage area
- Land-use scenario - industrial/LANL control
- Interim Action implemented in 1996/1997
 - ◆ Removed portion of radionuclide source term (390 yd³) and installed BMPs



Phase I PRS Characterization

- **FY92 - radiation survey and soil sampling of 3 locations confirmed presence of radionuclide contamination**
 - ◆ **metals below SALs**
 - ◆ **VOCs and SVOCs missed holding times**



Phase I PRS Characterization (concluded)

- **FY93 - radiation survey and surface soil sampling of 8 locations (various depth intervals) to confirm extent of radionuclide contamination**
 - ◆ **resampling of FY92 locations for VOCs/SVOCs, none detected**
- **Drainage channels identified as areas with highest radionuclide concentrations**
- **Temporary fencing installed around perimeter to restrict access**

Analytical Results

- No VOCs or SVOCs detected
- 7 inorganics detected above UTL but below SALs
- Radionuclides detected above background and SALs

Analytical results and details from all previous investigations at PRS 21-011(k) will be provided in the VCA Plan



Analytical Results (concluded)

MAXIMUM RADIONUCLIDE LEVELS AT PRS 21-011(k)

TABLE 1.0-1

MAXIMUM RADIONUCLIDE LEVELS AT PRS 21-011(k)

LOCATION	RADIONUCLIDE	MAXIMUM LEVEL		ESH-1 POSTING LIMIT ^b (pCi/g)	SCREENING ACTION LEVEL ^c (pCi/g)
		ACTIVITY (pCi/g)	ESTIMATED DOSE ^a (mrem/y)		
21-1416	Americium-241	2 600	1 000	265	22
21-1416	Plutonium-238	2 200	700	315	27
21-1416	Plutonium-239	46 000	16 000	287	24
21-1416	Strontium-90	1 800	30	6590	4.4
21-1597	Cesium-137	3 226	14 000	22.5	5.1

^a Estimated effective dose equivalent calculated under an industrial worker scenario, using assumptions of LaFrate (1996).

^b Activity concentration of a radionuclide which, if it were the only contaminant, would result in 100 mrem/yr effective dose equivalent under an industrial worker scenario (LaFrate 1996).

^c Activity concentration of a radionuclide which, if it were the only contaminant, would result in a 10 mrem/yr effective dose equivalent under a residential scenario (EPA 1995, 1307).



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Slide 8



Interim Action

- **Pre-excavation sodium iodide radiation survey**
- **Soil exhibiting $>100,000$ cpm was excavated from outfall area, 390 yd³ shipped to TA-54, Area G**
- **Post-excavation radiation surveys showed gross gamma activities below 100,000 cpm over the entire upper drainage**
- **Stormwater run-on and runoff controls installed, routinely inspected and maintained**

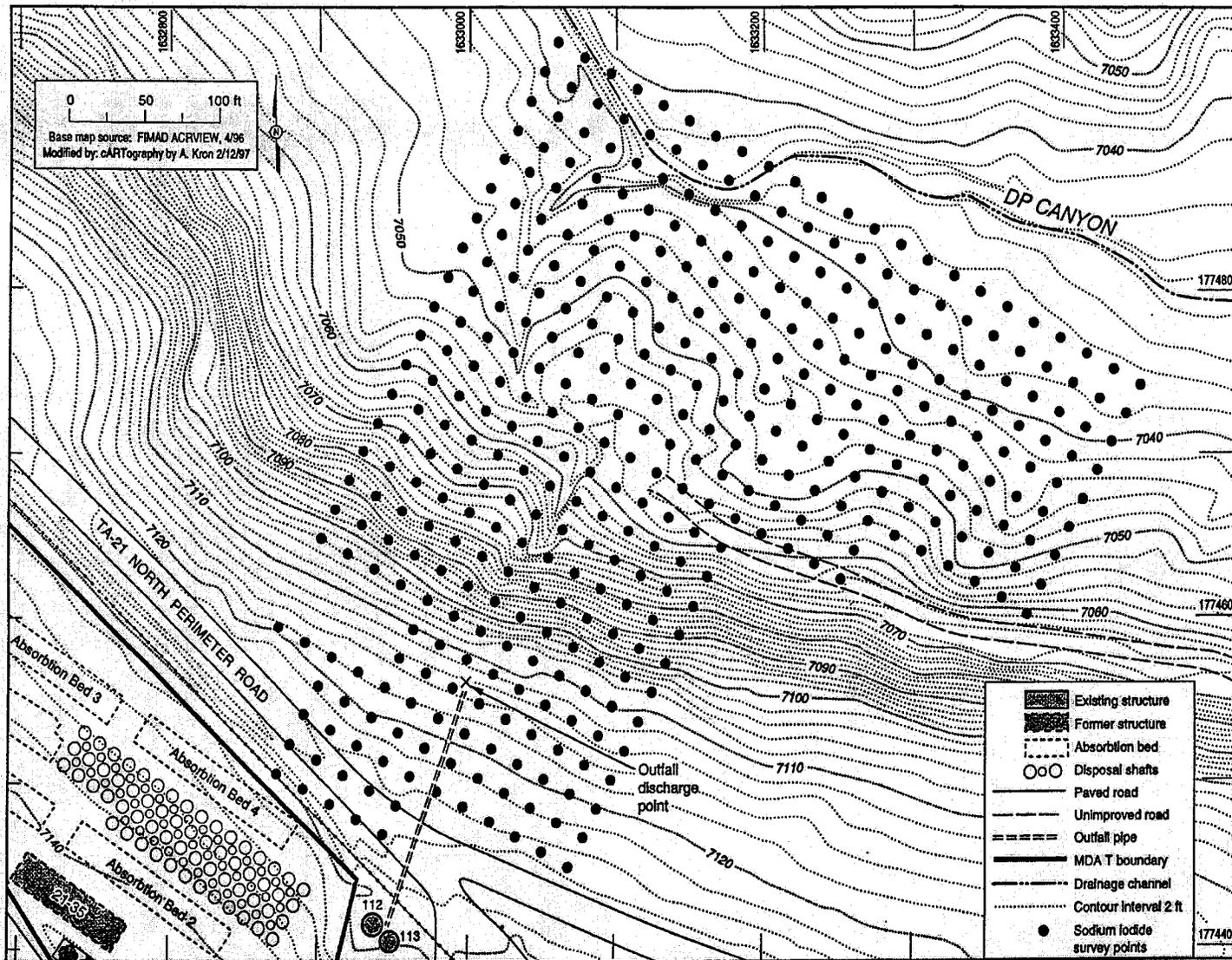
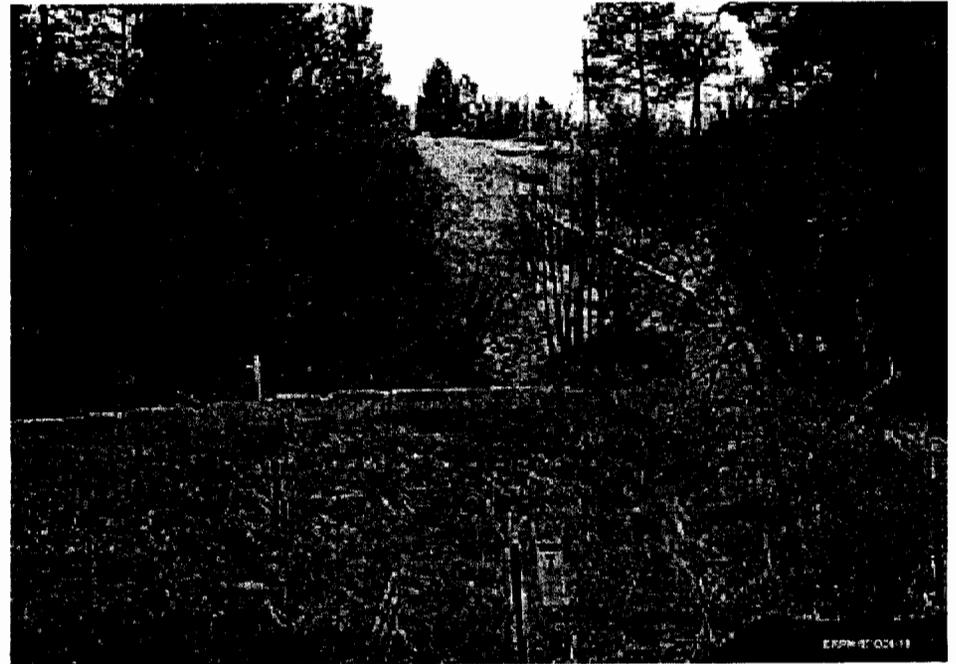


Fig. 2.0-1 Sodium iodide survey points for the pre-investigation survey at PRS 21-011(k).

PRS 21-011(k) During Interim Actions



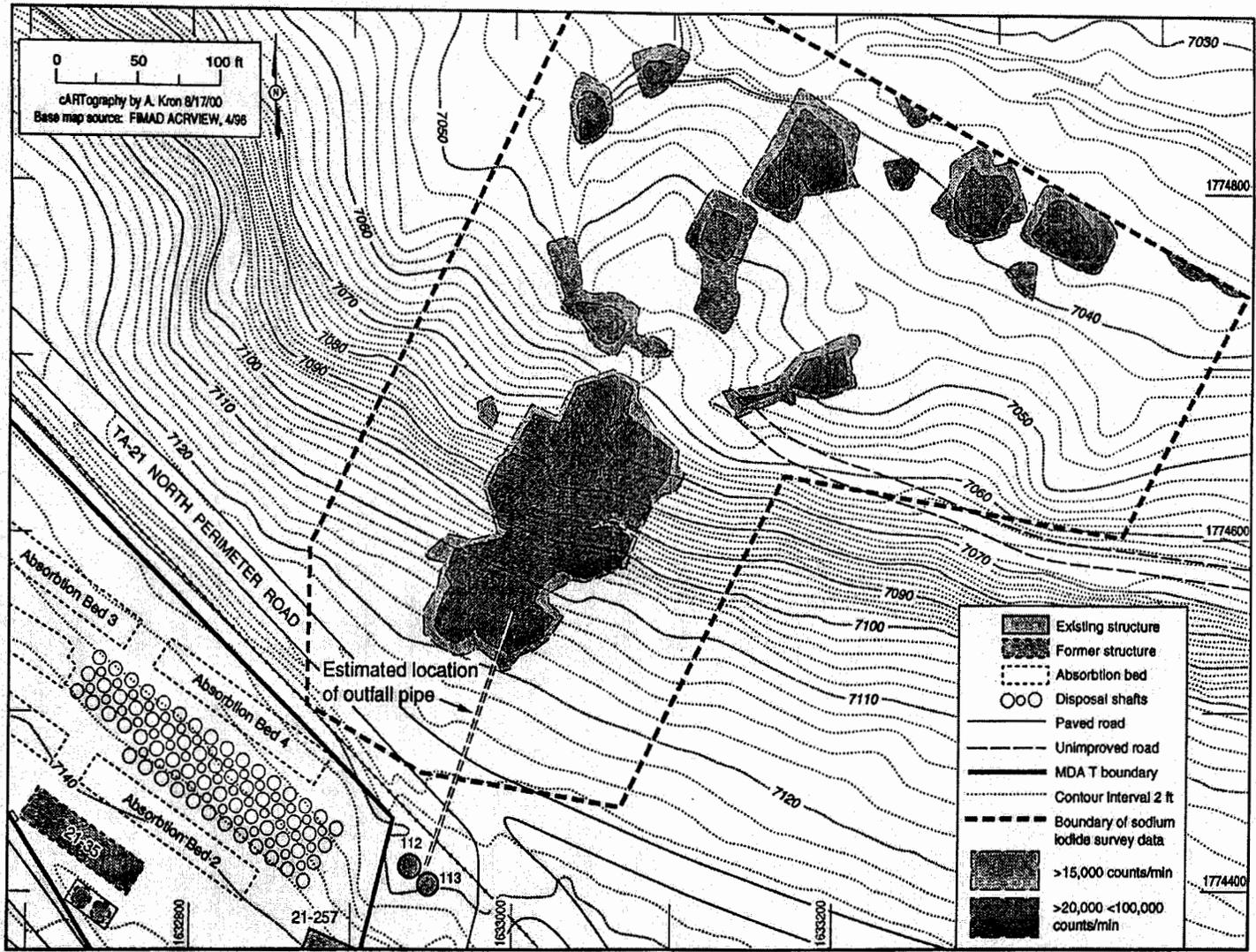


Figure 1-2 Sodium iodide surface data from the post-investigation survey at PRS 21-011(k)



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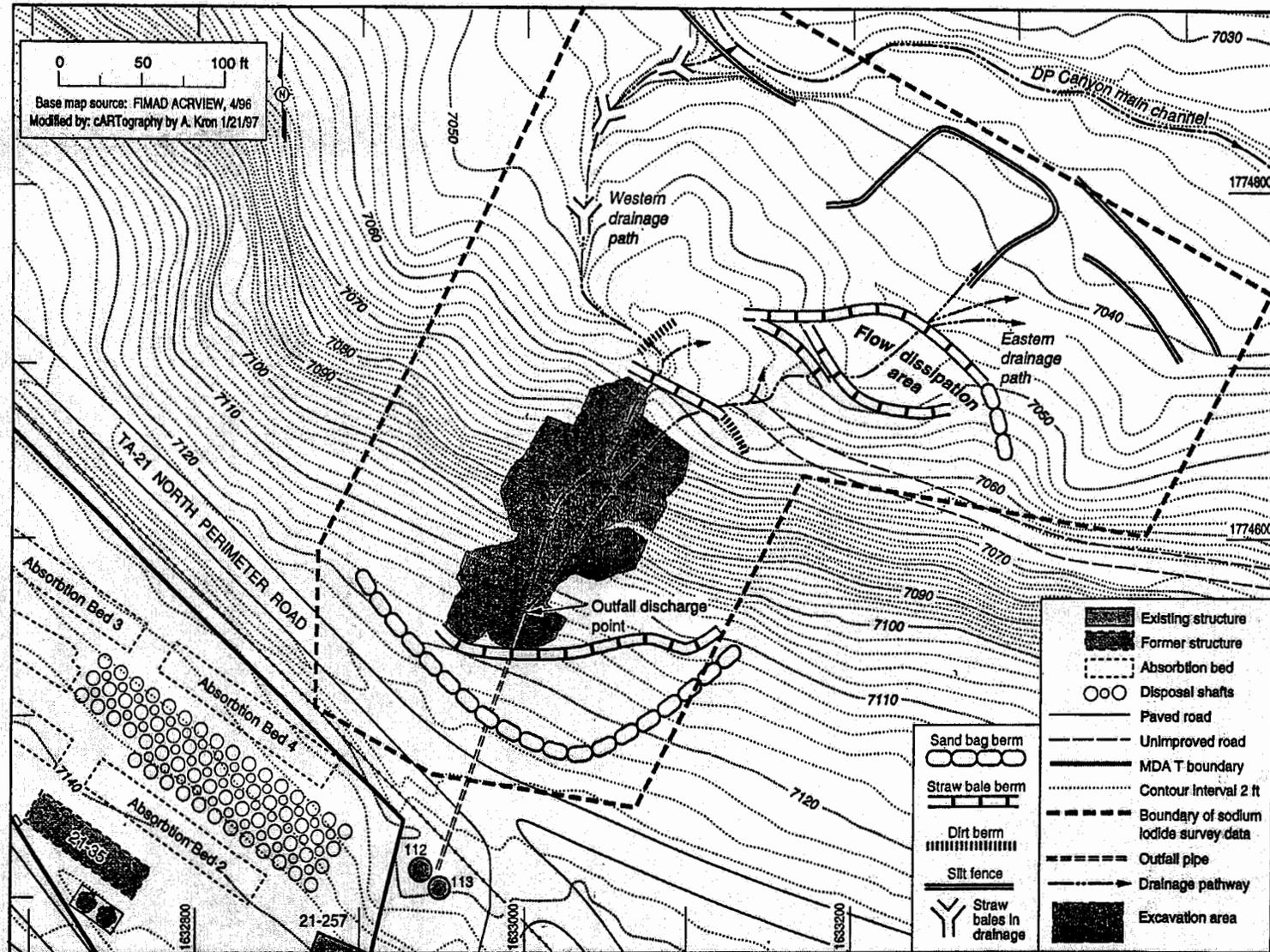


Fig. 4.0-1 Storm water control measures installed during the interim action at PRS 21-011(k).



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Slide 13



PRS 21-011(k) After Site Interim Actions



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Slide 14



Proposed Cleanup

- **Removal (using heavy equipment) of approximately 2,000 yd³ of surface soil, tuff, and channel sediment deposits from outfall and drainage channels**
- **Field screening**
 - ◆ **instrument type and screening approach to be determined**
- **Confirm with fixed lab samples**
 - ◆ **radionuclides**
 - ◆ **percentage analyzed for metals, SVOCs, and VOCs**



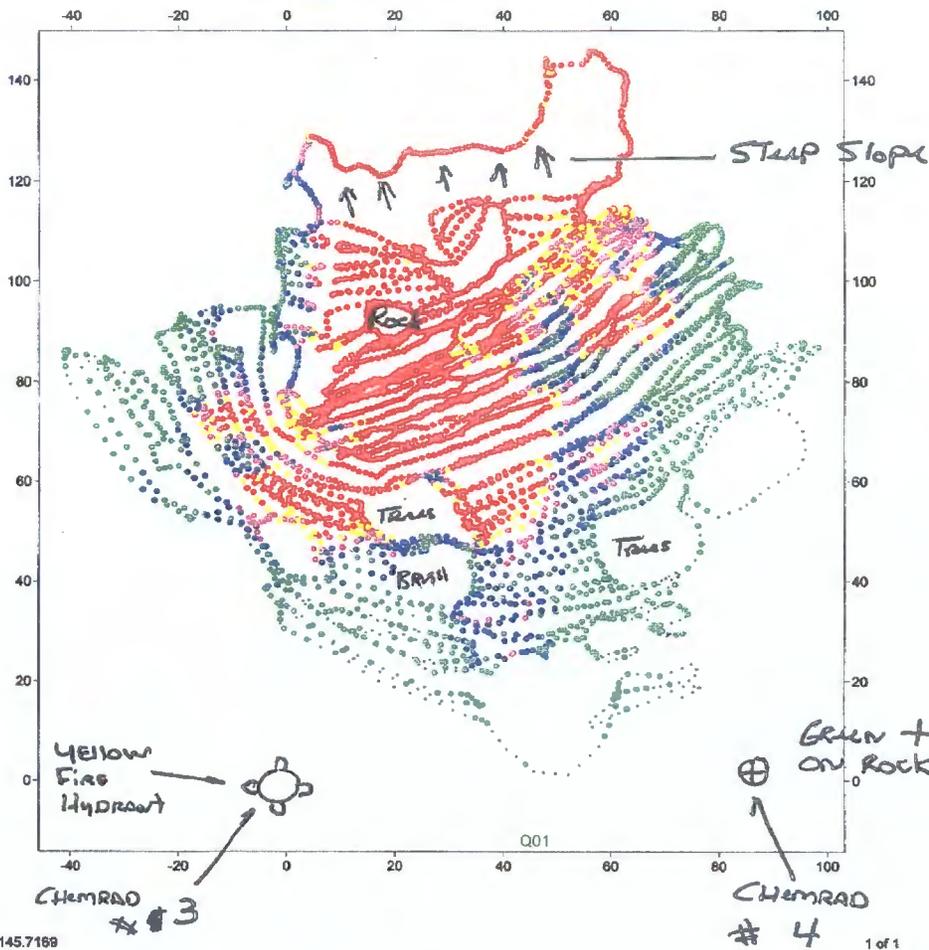
LOGGER Analyze v1.64g Track Map

Site: DPCAN (A)

Signal: NaI 1x1 (cpm)

Time: 08:36:04 07/07/00

Threshold:
> 5000



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Slide 16



Site-Specific Rad Cleanup Levels

- **Basis for cleanup**
 - ◆ **industrial land use that will remain under LANL control (restricted access) for foreseeable future**
 - ◆ **PRS located in drainage area**
 - ◆ **remediation will eliminate potential for contaminant migration**
- **Derivation of cleanup levels will be discussed during preparation of VCA Plan**



Waste Types and Volume

- **Contaminated soil and tuff - LLW: approximately 2000 yd³**
- **Sampling waste/PPE - LLW: 10 yd³**
- **Decontamination waste from heavy equipment - LLW: 250 gal.**



Schedule/Cost Estimate

- **Time frame - Begin plan preparation in fall 2000**
- **Duration - 3 months for field work, all of FY01 for entire project**
- **Cost estimate - \$2.2 million (based on current ER resource waste management estimates)**



Implementation

- **Storm Water Pollution Prevention Plan**
- **Supplement current run-on and runoff control measures, as necessary**
- **Remove tuff and soil in outfall area and drainage channels**
- **Field screening (rad)**
- **Remove additional material (as necessary) based on screening and confirm samples**

Implementation (continued)

- **Collect confirmatory samples**
 - ◆ for fixed analyses based on rad screening to verify cleanup, (% for metals, SVOCs, and VOCs)
- **Site restoration**
 - ◆ recontour, reseed, and monitor runoff control measures until 75% regrowth of vegetation is achieved and/or control concurrence received by ESH-18



Implementation (concluded)

- **Dispose of waste**
- **Decontaminate heavy equipment**
- **Write completion report**
- **Submit NFA permit modification request**



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Slide 23

