

BSC

Transportation Data Pedigree Form

QA: N/A

Page 1 of 2

Complete only applicable items.

Subcontractor: Nevada Rail Partners	Item Number/Title/Revision: T10: Facilities/ <i>Facilities-Design Analysis Report, Mina Rail Corridor - NRP-R-SYSW-FA-0002-00</i> , Rev. 00 Exhibit I, Item Number 15h, RFP Reference Exhibit D-2.10c.2	Submittal Date: April 18, 2007	SRCT No.: 07- 00054
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Section I. Submittal Information (includes above information)

Submittal Description and Revision Summary for Entire Submittal:

The document has been revised per the NRP-BSC comment resolution process for the previous version of the Facilities-Design Analysis Report. DEIS Related report of the NRL Facilities at the Concept Design Level. Includes descriptions and drawings of the facilities based on BSC provided data and other reports produced by NRL. Information is intended to convey general configuration of the facilities, which be further refined as design work proceeds.

Revision 00 incorporates changes and refinements based on comments received and other corrections and clarifications as needed.

Special Instructions:

Both document files contain all text and appendices. Either file can be printed in its entirety

Section II. Data File Information (Add lines below if needed for additional files. Indicate "Last item" or "End of list" on last line used.)

Filename	Rev.	File Size	Description (File description and revision summary for file)	Application and Version/ Add-in or Extension and Version
T10_Cover_18April2007.ppt	00	710 KB	Report cover for the <i>Facilities-Design Analysis Report, Mina Rail Corridor - Rev. 00</i>	Microsoft Powerpoint 2003
T10_MRC_Facilities_Rev00_FINALreadonly_18April07.doc	00	5,884 KB	Main text (Read Only) with all graphics - <i>Facilities-Design Analysis Report, Mina Rail Corridor - NRP-R-SYSW-FA-0002-00 - Rev. 00</i>	Microsoft Word 2003
T10_MRC_Facilities_Rev00_FINALredlines_18April07.doc <i>off</i>	00	839 KB	Scanned redline version of the complete document with all imbedded graphics - <i>Facilities-Design Analysis Report, Mina Rail Corridor - NRP-R-SYSW-FA-0002-00 - Rev. 00</i>	Adobe Acrobat 7.0 <i>CB</i> Microsoft Word 2003 <i>4-19-07</i>
T10_MRC_Facilities_Rev00_FINAL_18April07.doc	00	5,869 KB	Complete document with all graphics— <i>Facilities-Design Analysis Report, Mina Rail Corridor - NRP-R-SYSW-FA-0002-00 - Rev. 00</i>	Microsoft Word 2003
T10_MRC_Facilities_Rev00_FINAL_18April07.pdf	00	1,631 KB	Scanned version of the complete document with all imbedded graphics— <i>Facilities-Design Analysis Report, Mina Rail Corridor - NRP-R-SYSW-FA-0002-00 - Rev. 00</i>	Adobe Acrobat 6.0 Standard Version: <i>7.0 CB</i> <i>4-19-07</i>
*****Last Item*****				

Section III. Metadata

<input type="checkbox"/> GIS Metadata All GIS data is preferred in ArcGIS9.1 UTM, NAD1983, Zone11, Feet.	Projection:
	Datum:
	Zone:
	Units:
<input type="checkbox"/> CAD Metadata CAD drawings are preferred in Bentley MicroStation V8 and/or InRoads and should adhere to established CAD standards.	Level descriptions:
	Scale:
	Units of Measurement:
	Horizontal and Vertical Datum:

Section IV. Data Screening (Completed by BSC personnel)

Suitable for Review? <input checked="" type="checkbox"/> Yes* <input type="checkbox"/> No	Screening Name: <i>Cathy Stettler</i>	Signature: <i>Cathy Stettler</i>	Date: <i>4/19/07</i>
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BSC

Transportation Data Pedigree Form

QA: N/A
Page 2 of 2

Complete only applicable items.

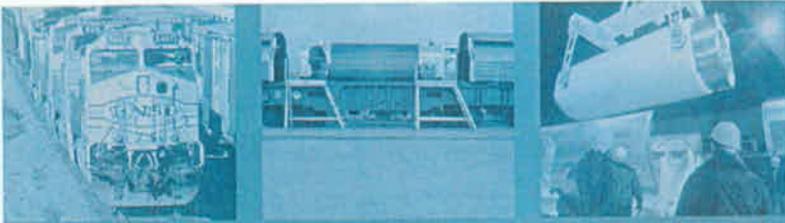
Subcontractor: Nevada Rail Partners	Item Number/Title/Revision: T10: Facilities/Facilities-Design Analysis Report, Mina Rail Corridor - NRP-R-SYSW-FA-0002-00, Rev. 00 Exhibit I, Item Number 15h, RFP Reference Exhibit D-2.10c.2	Submittal Date: April 18, 2007	SRCT No.:
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*If "Yes", Data Storage Location: *AVT\data\NRP\Task 10 Facilities (Fueling, Siding, Maintenance)\07-00054 Facilities Design*

Comments: (Justification for rejecting submittal is required; other comments are optional.)
Analysis Rpt Mina REV 00 04-18-07

Section V. STR Disposition of Submittal

Process for Review? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	** If "No", date returned:	Comments:
STR Name: <i>Gene Allen</i>	Signature: <i>[Signature]</i> <i>4/19/07</i>	Date: <i>4/20/07</i>



Facilities-Design Analysis Report Mina Rail Corridor

Task 10: Facilities

REV. 00

Document No. NRP-R-SYSW-FA-0002-00

Prepared by:



Prepared for:



Nevada Rail Line Conceptual Design

Subcontract NN-HC4-00239

April 18, 2007

Facilities–Design Analysis Report Mina Rail Corridor

Task 10: Facilities

Rev. 00

Document No. NRP-R-SYSW-FA-0002-00

Nevada Rail Line Conceptual Design
Subcontract NN-HC4-00239
18 April 2007

Prepared for:
Bechtel SAIC Company, LLC
1180 N. Town Center Drive
Las Vegas, NV 89144

Prepared by:
Nevada Rail Partners
770 E. Warm Springs Road, Suite 360
Las Vegas, NV 89119

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Acronyms

ADA	Americans with Disabilities Act
cfs	cubic feet per second
CMF	cask maintenance facility
CRC	Caliente Rail Corridor
DOD	U.S. Department of Defense
DOE	U.S. Department of Energy
EOL	end-of-line
gpd	gallons per day
ICBO	International Conference of Building Officials
MN	Mina Segment
MOW	maintenance-of-way
MRC	Mina Rail Corridor
NRL	Nevada Rail Line
NTOC	National Transportation Operations Center
RA EIS	Rail Alignment Environmental Impact Study
Repository	Yucca Mountain Geologic Repository
RIP	repair-in-place
sq ft or SF	square feet
TCC	train control center
UBC	Uniform Building Code
UPRR	Union Pacific Railroad
U.S. Highway 95	US 95

1.1 PURPOSE

The project addressed in this report is the Nevada Rail Line (NRL), which would connect the existing national rail system with the U.S. Department of Energy's (DOE's) potential Yucca Mountain Geologic Repository (Repository). The site would be the nation's first geological repository designed to store and dispose of spent nuclear fuel and high-level radioactive waste. The NRL would provide a means of transporting the waste by rail to the Repository as well as transporting construction materials by rail to support Repository operations. Two potential corridors between the existing national rail system and the Repository have been evaluated: 1) the Caliente Rail Corridor (CRC), beginning near Caliente, Nevada, and 2) the Mina Rail Corridor (MRC), beginning near Fort Churchill, east of Wabuska, Nevada. The term "NRL" is used to refer to aspects of facility design, construction, and operation that are not particular to a specific alignment, and the term "MRC" is used only where specifically applicable to the Mina Rail Corridor.

This report describes the facilities design analysis for the MRC. The objectives of this report are:

- To provide documentation and support for conceptual layouts of facilities sites, including yards, buildings, parking and access, and supporting infrastructure.
- To provide a basis for continuing design development of MRC facilities.
- To provide technical data for DOE's *Rail Alignment Environmental Impact Statement (RA EIS)*.
- To document interface points between the Nevada Department of Transportation, National Transportation Operations, and Repository site development engineering personnel. This includes functional, spatial, access, operational and utility interface points.

Additional details relative to floor plans, building layouts, and facility requirements will be developed during continuation of conceptual design and subsequent engineering activities.

1.2 CONTENTS

This report is not intended to be a stand-alone document. Sections that overlap with or duplicate information contained in *Facilities – Design Analysis Report, Caliente Rail Corridor (NRP 2007f)* reference the location of the data in the CRC document. This *Facilities–Design Analysis Report, Mina Rail Corridor* describes the location, site, functions, concept configuration, and Repository site parameters for the various MRC facilities. This report is intended for use as a reference for preparation of the RA EIS. The facilities and their locations are:

- Union Pacific Railroad (UPRR) interchange yard – No separate interchange yard is required for the MRC. Instead, designated tracks in the Hawthorne staging yard would serve as interchange tracks.
- Hawthorne staging yard – The staging yard is where railroad cars would be held and sorted into trains for delivery to the NRL EOL facility (inbound) or interchange tracks (outbound). This site would incorporate a satellite maintenance-of-way (MOW) facility.
- MOW facility – Maintenance of the track, bridges, tunnels, culverts, grade crossings, signal equipment, communications equipment, and other wayside facilities and equipment would be performed and coordinated from the MOW facility (consisting of combined headquarters and trackside facilities). This facility would be located either at Silver Peak (Mina Segment [MN] 1) or at Klondike (MN2 and MN3).

- NRL end-of-line (EOL) facility – The NRL EOL yard/administrative office and crew facility would be sited adjacent to the main track near the Repository and is considered with the co-located cask maintenance facility (CMF). This site would incorporate a satellite MOW facility.

Figure 1-A shows the facility locations.

These facilities are in addition to more than 254 miles of main track and passing sidings (as shown in the *Engineered Plan & Profile Drawing Set, Mina Rail Corridor* [NRP 2007e]), bridges and culverts, grade crossings, railroad signals and communications systems, and wayside equipment associated with the MRC rail alignment, as well as any temporary facilities associated with the construction of the rail line.

The concept designs for all of the NRL facilities are based on conventional freight rail operations. There are no unique components, infrastructure, or systems to accommodate the practices associated with nuclear materials handling, storage, or operations. In addition, no specific security components, infrastructure, or systems are included in the current NRL concepts.

This report is one of several prepared to support and provide initial input to the first draft of the RA EIS. The other reports are as follows:

- *Air Quality Emission Factors and Socioeconomic Input, Mina Rail Corridor* (NRP 2007a)
- *Alignment Development Report, Mina Rail Corridor* (NRP 2007b)
- *Comparative Cost Estimates, Mina Rail Corridor* (NRP 2007c)
- *Construction Plan, Mina Rail Corridor* (NRP 2007d)
- *Operations and Maintenance Report, Mina Rail Corridor* (NRP 2007g)
- *Route Sections and Structures Report, Caliente Rail Corridor* (NRP 2007h)

Each report covers a specific topic for a specific purpose. Accordingly, each report utilizes data from various sources in varying levels of detail and precision, as appropriate, as well as in different contexts. Although the reports are consistent in overall conceptual design, numerical values for certain parameters may vary from one report to another. This variation is due to the conceptual nature of the reports and their distinct areas of focus; it should not be considered an abnormal situation or an indication of error.

It should be noted that the term “rail facilities,” as used in this report, includes trackage, buildings, utilities, access roadway, and other site improvements required for the purpose of supporting line haul train operations and rail line maintenance. Although the mainline of the NRL, including passing sidings and the signaling system infrastructure, can also be termed “rail facilities,” these items are not addressed in this report but are the specific subjects of the other reports, listed above.

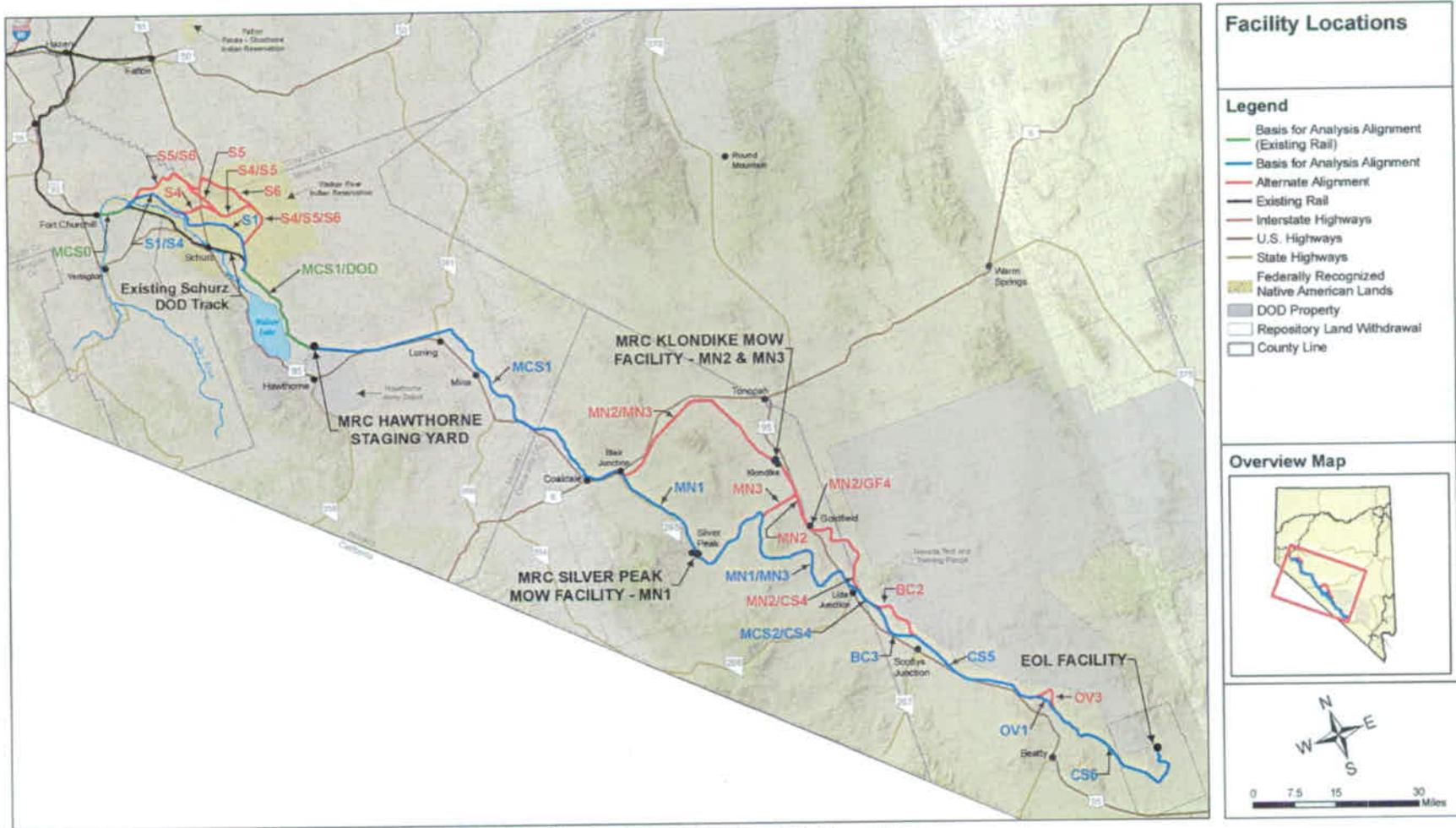


Figure 1-A. MRC Facility Locations

2.1 METHODOLOGY

2.1.1 Track Layout

Refer to Section 3.1.1 of *Facilities–Design Analysis Report, Caliente Rail Corridor* (NRP 2007f).

2.1.2 Buildings

Refer to Section 3.1.2 of *Facilities–Design Analysis Report, Caliente Rail Corridor* (NRP 2007f). The staffing requirements and location assignments as set forward in the *Operations and Maintenance Report, Mina Rail Corridor* (NRP 2007g) provide the framework for determining functional space requirements.

2.1.3 Staffing / Sizing

Refer to Section 3.1.3 of *Facilities–Design Analysis Report, Caliente Rail Corridor* (NRP 2007f).

Staffing requirements at each facility are summarized in Table 2-1. The staff positions have been condensed into three categories: professional, labor, and clerical. Approximately 15 train control center (TCC)/ National Transportation Operations Center (NTOC) employees are included in the EOL staffing total.

Table 2-1. Staffing Matrix Summary

Staff Position	Primary Location			Total
	Staging Yard	MOW Facility	EOL Facility	
Professional	4	5	11	20
Labor	35	30	25	90
Clerical	1	5	4	10
Total	40	40	40	120

2.1.4 Location

The facility locations were chosen in conformance with the operational function of the facilities. All facilities would be adjacent to the alignment. A secondary consideration is vehicle access to the facility. All facilities are sited so as to have good vehicle access, which required the addition of an access road in some cases.

2.1.5 Utilities

The facilities described in this report would require typical power, water, water treatment and sewage systems, and possibly propane or natural gas. A description of site-specific utilities for each facility is included in Sections 3.0 through 5.0. The water requirements during construction for compaction, dust control, and other miscellaneous purposes for each of the facilities are presented in Table 2-2. Daily water requirements during operation are also included in the table.

2.0 Mina Rail Corridor Facilities

Table 2-2. Estimated Water Requirements for Facilities

Facility	Required during Construction		Required during Operation		
	Gallons Required (Total)	Acre-Feet Required (Total)	Daily Demand (gallons)	Total Annual Demand (acre-feet)	Emergency Storage for Fire Safety (gallons)
Hawthorne Staging Yard	5,625,000	17.30	5,500	6.20	110,000
Silver Peak MOW Facility (1)	3,750,000	11.50	3,000	6.20	110,000
NRL EOL Facility	52,500,000	161.10	6,000	6.70	220,000
Sidings	-	-	165	0.20	0
Basis for Analysis¹ Total	61,875,000	189.90	14,665	19.30	440,000 (1.35 acre-feet)

Note: (1) Klondike MOW Facility would have similar water requirements.

The construction water requirements are based on earthwork quantities shown in *Comparative Cost Estimates, Mina Rail Corridor* (NRP 2007c) and an average water use of 90 gallons/cubic yard. The operational water requirements are derived from estimated staffing¹ and shift projections, a 50-gallons-per-day (gpd) per capita use ratio, shop process needs, and a multiplier of 1.5 to account for miscellaneous water needs. To calculate the annual demand, the daily requirement was multiplied by 365 days/year and divided by 325,851 gallons/acre-foot. The emergency storage requirements have not been included as part of the annual demand because these requirements are anticipated to be a one-time demand of approximately 440,000 gallons (1.35 acre-feet) that would be replenished only as needed, not necessarily on an annual basis.

For an overview of utilities requirements, refer to Section 3.1.5 of *Facilities-Design Analysis Report, Caliente Rail Corridor* (NRP 2007f).

2.1.6 Waste Streams

Refer to Section 3.1.6 of *Facilities-Design Analysis Report, Caliente Rail Corridor* (NRP 2007f).

2.2 ARCHITECTURAL CONSIDERATIONS

Refer to Section 3.2 of *Facilities-Design Analysis Report, Caliente Rail Corridor* (NRP 2007f).

¹ Throughout this and other NRP reports, the phrase 'basis for analysis' is used to provide a frame of reference for NRP's evaluations of the alignment's construction engineering and operational characteristics. Except for the *Operations and Maintenance Report, Mina Rail Corridor* (NRP 2007g), NRP reports provide data for all alignment segments so that consideration of other alternate segment combinations can be accomplished.

3.1 LOCATION, PURPOSE, AND FUNCTION

The staging yard is where railroad cars would be held and sorted into trains for delivery to the NRL EOL facility (inbound) or interchange tracks (outbound). In addition, loaded cask trains would exchange UPRR locomotives for NRL locomotives at this facility. Loaded cask trains would be processed intact and expedited through the interchange administrative process for movement to the EOL facility. Interchange documentation and car/train inspection functions would be accomplished in the staging yard. Facilities at the staging yard would include a locomotive fuel and sanding area, maintenance warehouse, light repair shop area, MOW lay-down area, and office for yard administrative and train crew reporting functions. There is the potential for co-locating the TCC and NTOC at this facility.

The staging yard would be one of the first major facilities constructed for the project. Thus, the yard would serve as staging for the balance of railroad construction handling ballast, rail, tie, and materials cars/trains. Designated tracks in the staging yard would also serve as UPRR interchange tracks. The staging yard would occupy approximately 48 acres.

3.2 BASIS OF DESIGN

3.2.1 Functional Parameters

Refer to Section 5.2.1 of *Facilities-Design Analysis Report, Caliente Rail Corridor* (NRP 2007f).

3.2.2 Assumptions

Refer to Section 5.2.2 of *Facilities-Design Analysis Report, Caliente Rail Corridor* (NRP 2007f).

3.3 TRACK LAYOUT

The basic configuration of the staging yard consists of 12 tracks that include a lead track, an inbound track, an outbound track, six switching tracks, a storage track, a repair-in-place (RIP) track, and a locomotive track. A 25-foot spacing between yard tracks is planned to allow an access road for car and train inspection. The 25-foot spacing would also permit adjacent tracks to remain in operation while one track is out of service for maintenance. The staging yard would be double-ended, permitting switching from either end. Figure 3-B shows the site plan for the Hawthorne staging yard.

Although the yard tracks have been given functional titles, the switching, inbound, and outbound tracks would be functionally interchangeable. The actual use of these tracks would be decided by the yardmaster based on current conditions. The RIP track is where light running repairs (such as brake-shoe change-out, wheel change-out, and door repair) would take place for rail cars. The locomotive track is where NRL and, if applicable, UPRR locomotives would be held between road haul assignments. The assigned switching locomotives for the staging yard would also be fueled and sanded on the locomotive track. Fuel would be supplied by a contractor-operated truck. Sand and other supplies would also be furnished by truck.

3.4 BUILDINGS

3.4.1 Building and Functions

Refer to Section 5.4.1 of *Facilities-Design Analysis Report, Caliente Rail Corridor* (NRP 2007f).

3.4.2 Space Sizing Table / Concept Configuration Footprint

Refer to Section 5.4.2 of *Facilities-Design Analysis Report, Caliente Rail Corridor* (NRP 2007f).

3.5 SITE LOCATION

The location proposed for the staging yard is Hawthorne, Nevada, at about U.S. Department of Defense (DOD) milepost 0 on Mina Common Segment 1. No alternative locations have been identified for the staging yard.

3.6 UTILITIES

The staging yard requires water, water treatment and sewage systems, power, and possibly propane or natural gas.

Storm Drainage – Approximately 0.5 acre would be required for a 6-foot-deep detention pond. This is based on the buildings and paved areas making up about 6.0 acres, and the track and unpaved areas making up about 42.0 acres at this site. A runoff rate of 1.7 cubic feet per second (cfs) was computed from these areas, and a 24-hour capacity was used.

Water (Domestic and Fire) –Water would be obtained from locally drilled wells or from the Hawthorne Army Depot potable and nonpotable water systems. Domestic water usage is estimated at 5,500 gpd based on an average of 50 gpd per occupant. A 110,000-gallon tank would be needed for fire protection, assuming a one-hour flow period with a 20 percent safety factor. Both of these values include TCC/NTOC personnel.

Sanitary Sewer –Water treatment and sewage would be handled by on-site treatment systems. Conservatively using the same calculations as for domestic water usage, this site would produce an estimated 5,500 gpd. An undetermined portion of this quantity may be generated as industrial waste and would depend on the operations performed at the staging yard.

Electrical Power –It is assumed that the staging yard would use commercial electric power obtained from the MRC power distribution system, with diesel-powered standby generators. The staging yard facilities (yard office/crew change facility, and satellite MOW) are estimated to have a normal power demand of 386,000 watts with the TCC/NTOC and 290,000 watts without the TCC/NTOC.

Propane or natural gas, if needed, would be obtained from on-site storage tanks.

Personnel identified as TCC and NTOC would be located either in the staging yard or the NRL EOL facility, not in both facilities.

3.7 ACCESS AND ROADS

To access the yard, a paved two-lane access road would extend the length of the yard on one side. The road would dead-end at one end of the yard, and a turnaround would be provided. An improved chip and seal roadway would also be incorporated to provide access to U.S. Highway 95 (US 95).

3.8 EXISTING FACILITIES

There are no existing facilities at the Hawthorne staging yard site under consideration other than the existing DOD track and the Hawthorne Army Depot Yard.

3.9 DRAWINGS

- Figure 3-A, MRC Hawthorne Staging Yard – Location Plan
- Figure 3-B, MRC Hawthorne Staging Yard – Site Plan
- Refer to Figures 5-F and F-G in *Facilities–Design Analysis Report, Caliente Rail Corridor* (NRP 2007f) for concept building renderings.

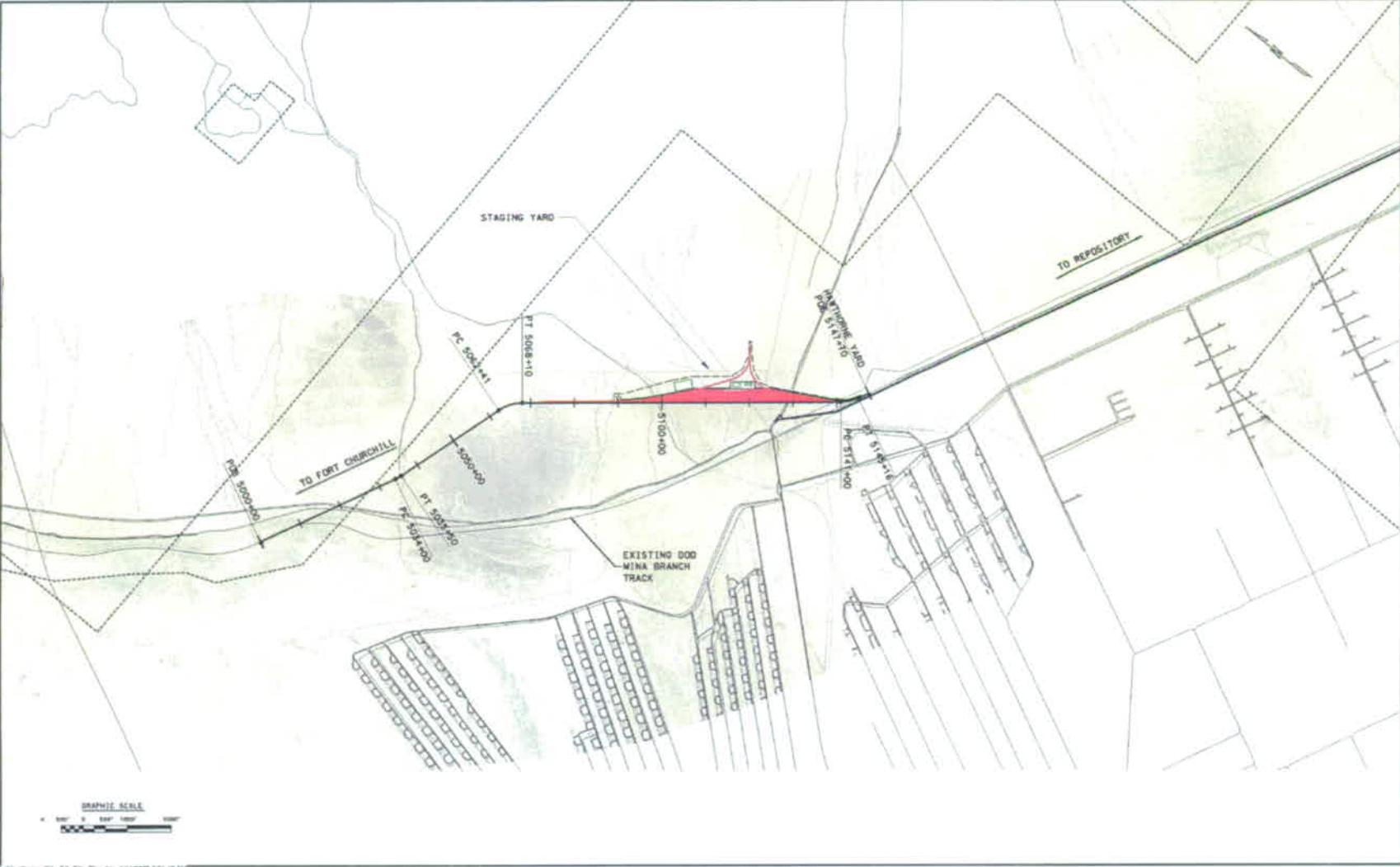


Figure 3-A. MRC Hawthorne Staging Yard – Location Plan

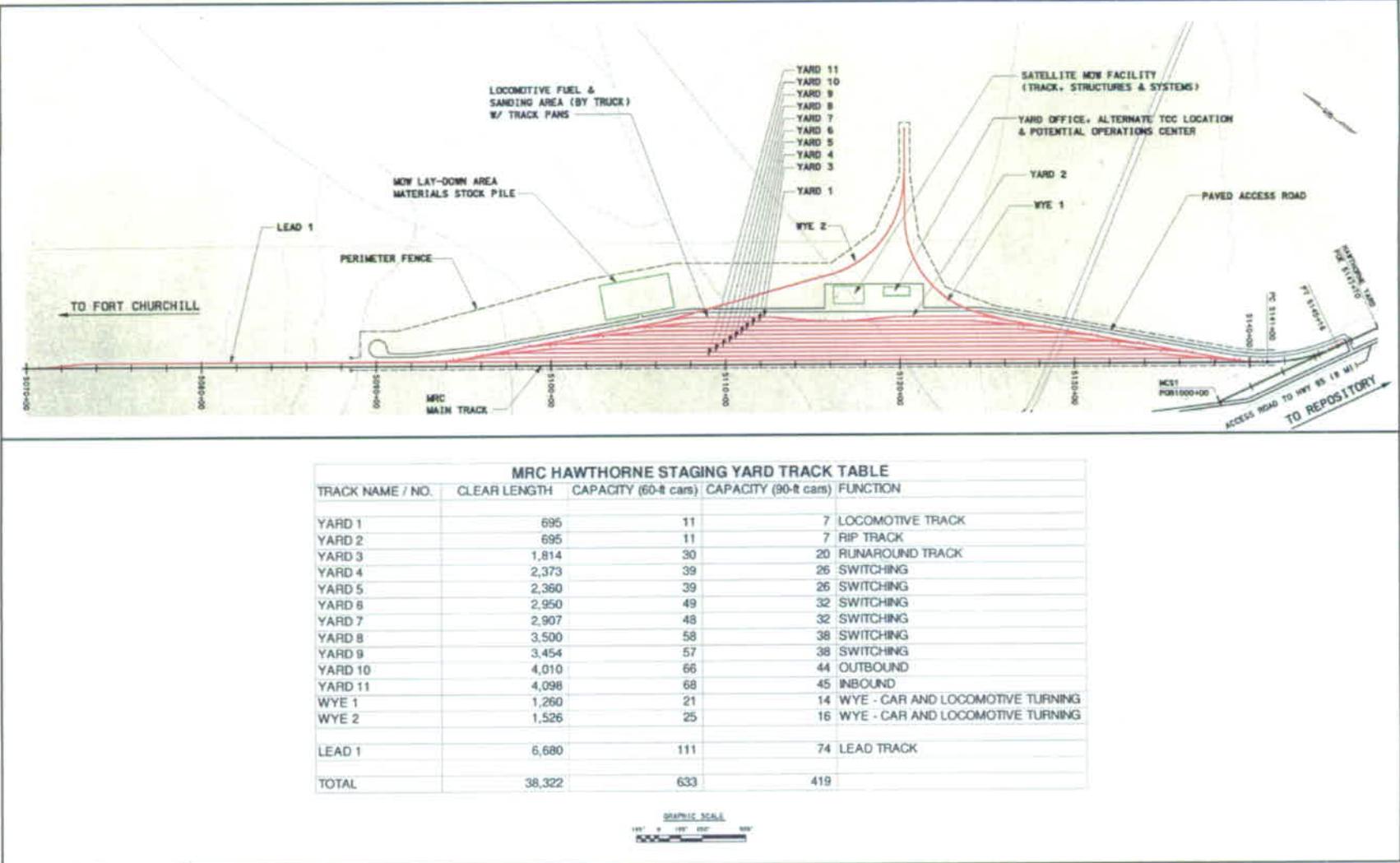


Figure 3-B. MRC Hawthorne Staging Yard – Site Plan

4.0 Mina Rail Corridor Maintenance-of-Way Facility

4.1 LOCATION, PURPOSE, AND FUNCTION

The MOW facility would be located either along MN1 near Silver Peak or along MN2 or MN3 near Klondike. Maintenance of the track, bridges, tunnels, culverts, grade crossings, signal equipment, communications equipment, and other wayside facilities and equipment would be performed and coordinated from a central combined headquarters and trackside MOW facility. In addition, the staff at this facility would be responsible for responding to rail-related accidents and to derailments where the track conditions may have been compromised, as well as for assisting in the coordination of activities which may require recovery of locomotives, rail cars, casks, and other equipment that have derailed from the track.

The MOW facility would include a building for administrative purposes, inside storage of spare parts and small tools, and a shop area; an outside storage area for heavy materials (ties, rail, ballast, etc.); and storage of large on-track track maintenance machines. This facility would have access to the mainline for the handling of rail cars carrying heavy and bulk materials and the movement of on-track maintenance machines. Figures 4-A and 4-B depict the potential MRC MOW sites, including the tracks and building.

Additionally, satellite MOW facilities would be located at the staging yard and at the EOL facility. These satellite facilities would function in a manner similar to the MOW facility but on a smaller scale. The satellite MOW areas are described in the discussion of the facility with which they are associated.

4.2 BASIS OF DESIGN

4.2.1 Functional Parameters

Refer to Section 7.2.1 of *Facilities-Design Analysis Report, Caliente Rail Corridor* (NRP 2007f).

4.2.2 Assumptions

It is assumed that the MOW facility would provide for the following:

- General office space for administrative functions and crew functions
- Toilet, wash, and locker/shower facilities
- Private offices for approximately five staff members
- Break/lunch room
- Conference room
- Shop area/inside storage
- Parking for employee and MRC vehicles
- Material storage areas
- Temporary facilities to support construction activities
- Storage and maintenance of on-track rail equipment
- Hi-rail vehicle access to main track
- Outside storage area for materials
- Yard tracks for MOW purposes, including handling of ballast trains
- Track access to mainline

4.3 TRACK LAYOUT

Refer to Section 7.3 of *Facilities-Design Analysis Report, Caliente Rail Corridor* (NRP 2007f).

4.0 Mina Rail Corridor Maintenance-of-Way Facility

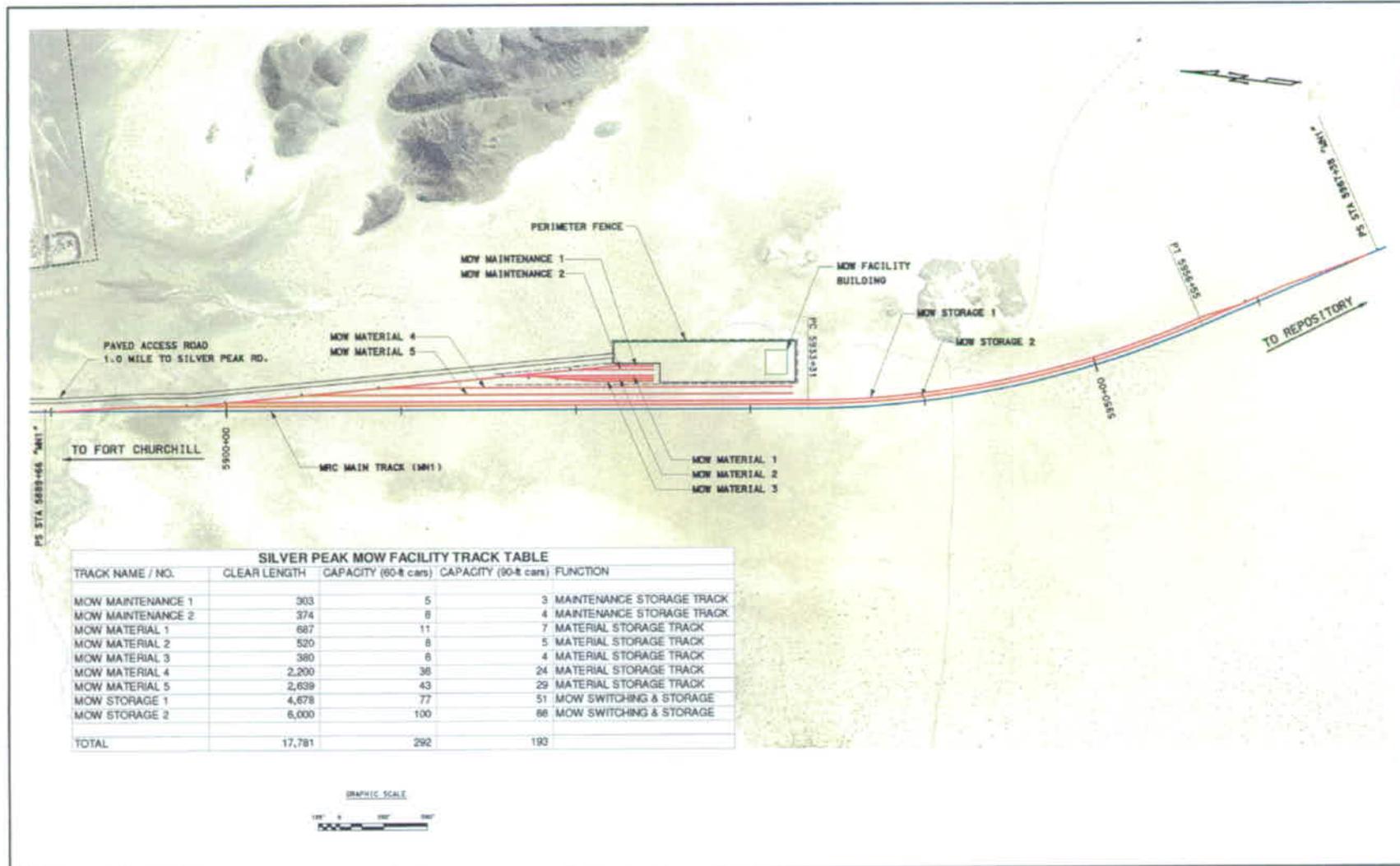


Figure 4-A. Silver Peak MOW Facility (MN1)

4.0 Mina Rail Corridor Maintenance-of-Way Facility

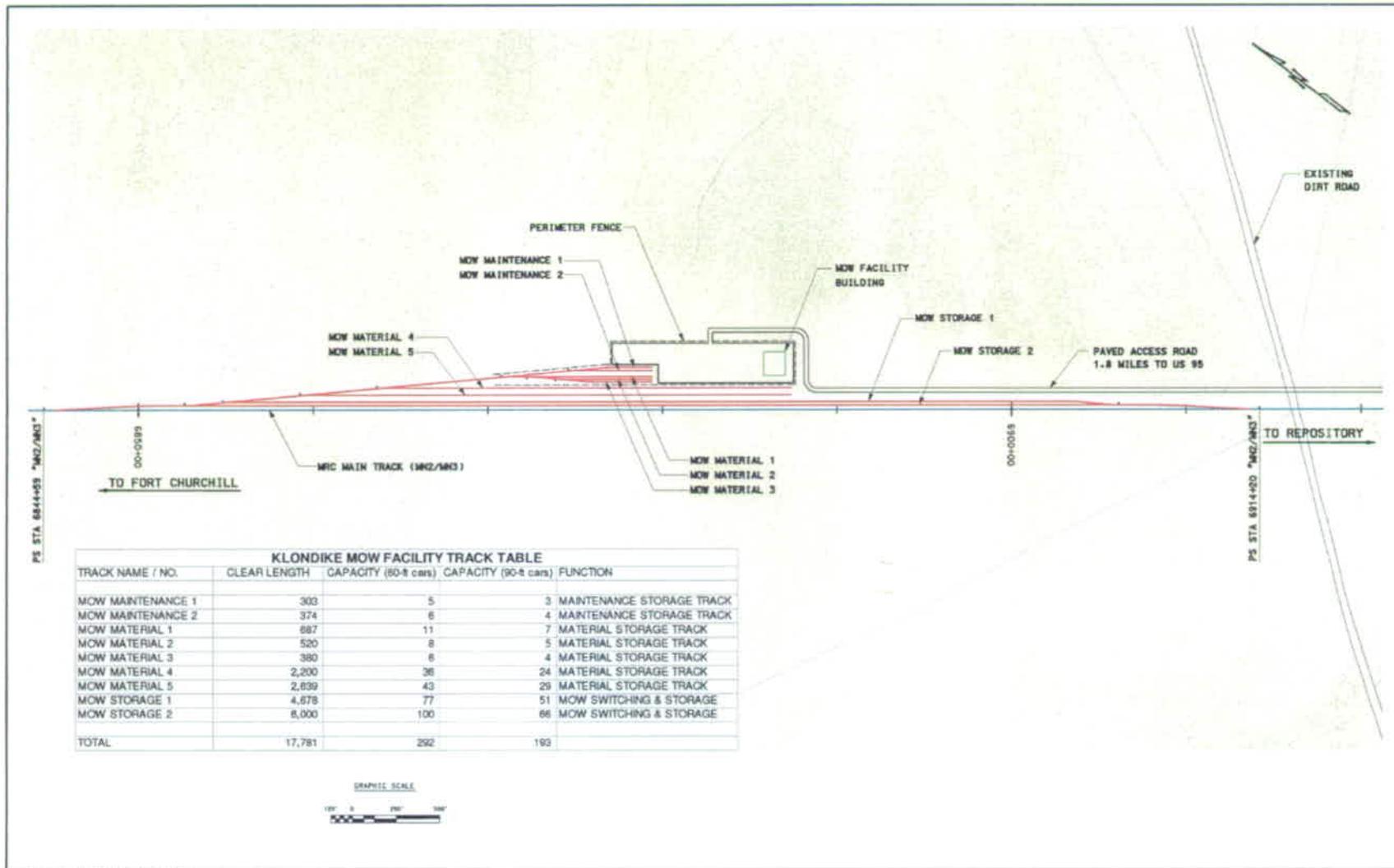


Figure 4-B. Klondike MOW Facility (MN2 and MN3)

4.0 Mina Rail Corridor Maintenance-of-Way Facility

4.4 BUILDINGS

4.4.1 Buildings and Functions

The MOW facility building would house the supervisory and administrative staff of the maintenance organization. Thus, it would contain administrative, welfare, and shop/storage spaces. Track, signal, and communications maintainers would also be based at this location. This facility would accommodate heavy maintenance and construction materials and track-mounted maintenance machinery and equipment. The building would also have space for the storage of spare parts, tools, and small track maintenance machines. Parking would be provided for the hi-rail and other trucks associated with the maintenance activities. Maintenance staff based at the building would be responsible for most of the total MRC route (with MOW satellite facilities servicing the yards at both ends of the alignment). The building would occupy approximately 20,800 square feet (sq ft); its approximate dimensions would be 120 feet wide by 175 feet long.

The total site, including outside storage and yard tracks, would occupy about 6 acres.

4.4.2 Space Sizing Table / Concept Configuration Footprint

Refer to Section 7.4.2 of *Facilities-Design Analysis Report, Caliente Rail Corridor* (NRP 2007f) for sizing methodology

The following space sizing table and concept configuration footprint were created for the MRC MOW facility building:

- Table 4-1, MRC MOW Facility – Space Sizing Table
- Figure 4-C, MRC MOW Facility – Concept Configuration Footprint

4.5 SITE LOCATION

The alternative locations have been sited near the town of Silver Peak (MN1), approximately 1.00 mile south of town, and near Klondike (MN2), approximately 1.8 miles west of US 95 between Tonopah and Goldfield.

4.6 UTILITIES

This site requires water, water treatment and sewage systems, power, and possibly propane.

Storm Drainage – This facility would consist of about 8.6 acres of buildings and paved areas and about 104 acres of unpaved areas. A runoff rate of 3.8 cfs was computed from these areas, and a 24-hour capacity was used. Assuming a 6-foot-deep detention pond, approximately 1.3 acres would be needed.

Water (Domestic and Fire) – Water would be obtained from locally drilled wells. Domestic water consumption for this site is estimated at 3,000 gpd, based on an average of 50 gpd per occupant. A 110,000-gallon tank would be needed for fire protection, based on the building square footage and assuming a one-hour flow period with a 20 percent safety factor.

Sanitary Sewer – Water treatment and sewage would be handled by local treatment systems. Conservatively using the same calculations as for domestic water usage, this site would produce an estimated 3,000 gpd. No separate industrial waste is expected to be generated from operations at this facility.

4.0 Mina Rail Corridor Maintenance-of-Way Facility

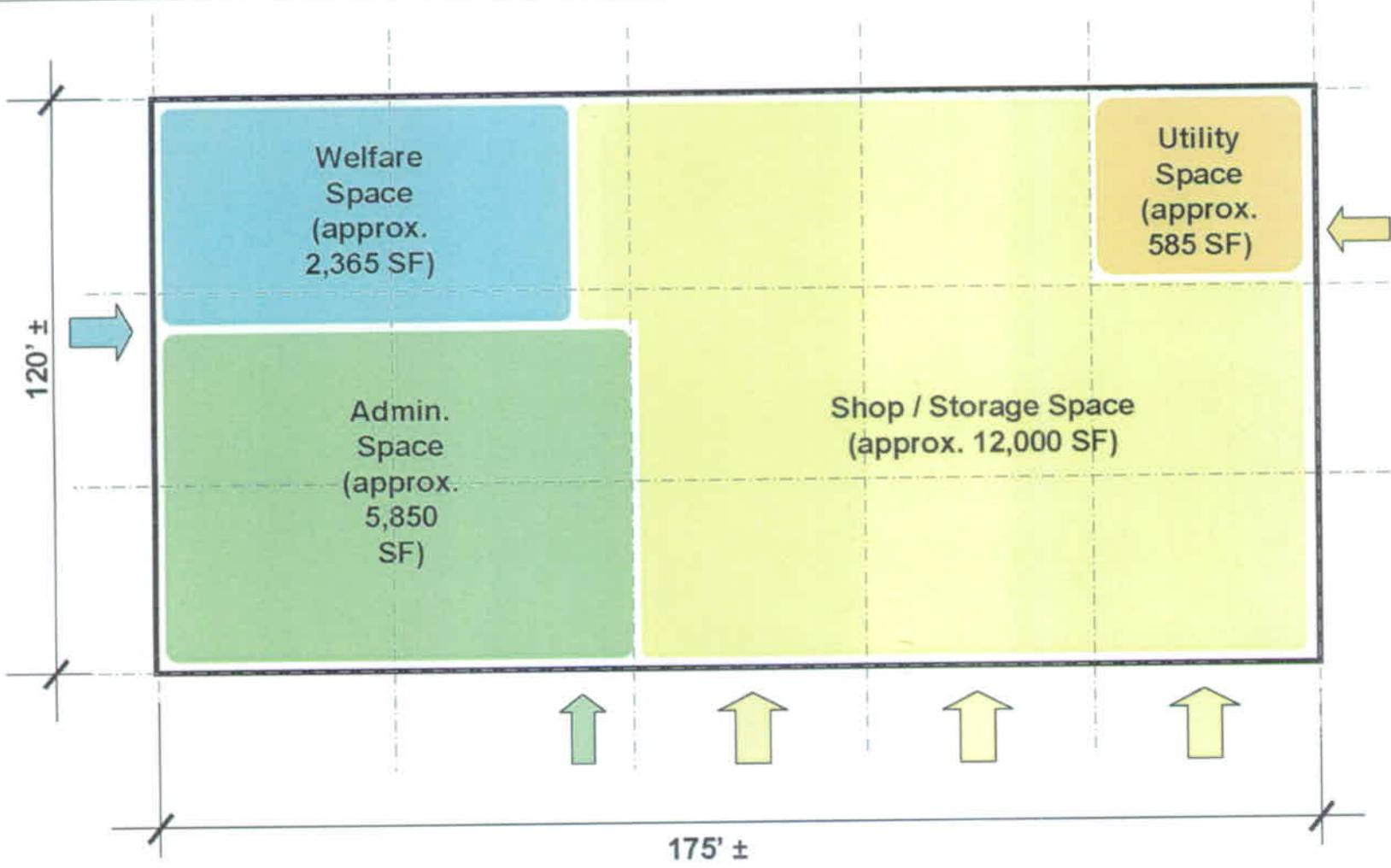
Table 4-1. MRC MOW Facility – Space Sizing Table

	Staffing / Room Functions	Square Feet	Methodology / Assumptions
ADMINISTRATIVE SPACE	Director office – engineering and mechanical	300	
	Track and structures maintenance supervisor	150	
	Storekeeper – track and structures	150	
	Signal and communications maintenance supervisor	150	
	Building maintenance supervisor	150	
	Track and structures maintenance staff / crew	1,200	Based on a total of 15 personnel having 15 individual workspaces at 80 sq ft per workspace.
	Building and maintenance carpenters	160	Based on a total of two personnel having two individual workspaces at 80 sq ft per workspace.
	Signal and communications staff	1040	Based on a total of 13 personnel having 13 individual workspaces at 80 sq ft per workspace.
	Administrative staff	200	Based on six administrative personnel sharing four workspaces at 50 sq ft per workspace.
	Administrative storage, filing and supplies, personal protective equipment storage	200	
	Reception area	200	
	Circulation at 20 percent	780	
	Contingency at 25 percent	1,170	Can accommodate required space for security personnel or for administrative personnel that may need to be added.
	Total Net Sq Ft for Area	5,850	
WELFARE SPACE	Men's locker	140	Full-height lockers; assumes 75 percent of staff are male = 23 lockers of the total of 30 required, at 6 sq ft per person = 140 sq ft.
	Men's shower	65	Assumes a total of two showers, 40 sq ft for Americans with Disabilities Act (ADA)-compliant shower, and 25 sq ft for a typical shower.
	Men's restroom	115	Based on actual occupants (40 total), not the occupant load of the building. Table 2-1 shows 40 occupants; a 50/50 split of men/women (20 men) is assumed. Per <i>Uniform Building Code</i> (UBC) (International Conference of Building Officials [ICBO] 1997) Table A-29-A, the minimum required is one ADA-compliant toilet at 45 sq ft, one standard toilet at 25 sq ft, one urinal at 15 sq ft, and one lavatory at 15 sq ft. One additional urinal at 15 sq ft would be desired assuming that male staff is 75 percent and female staff is 25 percent. (Circulation is included in the group total below).

4.0 Mina Rail Corridor Maintenance-of-Way Facility

Table 4-1. MRC MOW Facility – Space Sizing Table

	Staffing / Room Functions	Square Feet	Methodology / Assumptions
SHOPS	Women's locker	45	Full-height lockers; assumes 25 percent of staff are female = 7 lockers of the total of 30 required, at 6 sq ft per person = 45 sq ft.
	Women's shower	65	Assumes a total of two showers, 40 sq ft for ADA-compliant shower, and 25 sq ft for a typical shower.
	Women's restroom	110	Based on actual occupants (50 total), not the occupant load of the building. Table 2-1 shows 40 occupants; a 50/50 split of men/women (20 women) is assumed. Per UBC Table A-29-A, the minimum required is one ADA-compliant toilet at 45 sq ft, two standard toilets at 25 sq ft each, and one lavatory at 15 sq ft. (Circulation is included in the group total below).
	Lunchroom/breakroom	750	Based on the largest shift at 23 total staff; rounded up to 25 at 30 sq ft person = 750.
	Conference room/training	300	The room would seat 15 at 20 sq ft per person.
	Circulation at 20 percent	320	
	Contingency at 25 percent	475	
	Total Net Sq Ft for Area	2,385	
SHOP/ STORAGE	Receiving and shipping room	200	
	General shop / storage	9,400	
	Contingency at 25 percent	2,400	
	Total Net Sq Ft for Area	12,000	
UTILITY	Electrical room	100	
	Mechanical room	200	
	Utility / janitor closet	60	
	Telephone / data room	25	
	Circulation at 20 percent	80	
	Contingency at 25 percent	120	
	Total Net Sq Ft for Area	585	
Total Gross Square Feet	20,800		



MOW FACILITY – Approximately 20,800 SF

Concept Configuration Footprint

Not to Scale

Figure 4-C. MRC MOW Facility – Concept Configuration Footprint

4.0 Mina Rail Corridor Maintenance-of-Way Facility

Electrical Power – It is assumed that all alternative locations would use commercial electric power with diesel-powered standby generators. The MOW facility is estimated to have a normal power demand of 484,000 watts.

Propane or natural gas, if needed, would be obtained from on-site storage tanks.

4.7 ACCESS AND ROADS

The Silver Peak MOW site would be located approximately 1.0 mile from Silver Peak Road. The Klondike site would be located approximately 1.8 miles from US 95. Both sites would require appropriate paved access roads.

4.8 EXISTING FACILITIES

Paved roads and commercial electrical power are expected to be in proximity to the MOW site.

4.9 DRAWINGS

- Figure 4-A, Silver Peak MOW Facility (MN1)
- Figure 4-B, Klondike MOW Facility (MN2)
- Refer to Figure 7-E in *Facilities-Design Analysis Report, Caliente Rail Corridor* (NRP 2007f) for concept building renderings.

5.0 End-of-Line Facility

Refer to Section 6.0 of *Facilities-Design Analysis Report, Caliente Rail Corridor* (NRP 2007f).

6.0 References and Applicable Documents

ICBO. 1997. *Uniform Building Code*. ICBO.

NRP. 2007a. *Air Quality Emission Factors and Socioeconomic Input, Mina Rail Corridor*. Las Vegas, NV: NRP. NRP-R-SYSW-AQ-0003-00 Rev. 00, 20 April 2007.

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